History of 81-10:

81-10 info. in Yuly and monthly technical reports

12-55 considering purchase of a mercury-still to recover Hg by distillation

Note:

to 7-9,1957 Hg air concs. are reported in the Y-12 quarterly reports (no avg.) % > .1 mg/m³

10-12,1961 81-10 air concs. stop

Y/EX-24 pgs: equipment 34, quantities 57, 93 H2O 113 spill 141 air 148, 106

decanting description (Napier)

Refs:

1. efficiency study 1959
2. furnace specifications, instructions 1956, 1953
3. operating procedure (not dated)
4. monthly log sheets (Apr. 1957 - Oct. 1962) A-2, A-4, A-5
5. Y/EX-21/DEL REV (Do Not Use Y/EX-24 anymore - outdated)

spills → 81-10
B-4 (July 1953)

Rep No. 3266

81100f2.XLS

TABLE 1 81-10 Mercury Recovery Operations (3/57 - 7/62)							
Month/Year	Condensed (lbs)	Cumulative	Decanted (lbs)	Cumulative	Comments	Days in Operation	Total lbs. recovered
Apr-57	4,204	4,204	31,151	31,151		13	35,355
May-57	19,982	24,186	67,905	99,056		18	123,242
Jun-57	56,343	80,529	36,415	135,471		26	216,000
Jul-57	60,452	140,981	15,094	150,565		29	291,546
Aug-57	30,141	171,122	10,770	161,335		30	332,457
Sep-57	48,527	219,649	19,406	180,741		27	400,390
Oct-57	73,595	293,244	14,963	195,704		30	488,948
Nov-57	65,483	358,727	52,494	248,198	no logsheet	29	606,925
Dec-57	36,008	394,735	16,266	264,464		21	659,199
Jan-58	54,801	449,536	4,763	269,227		26	718,763
Feb-58	45,523	495,059	2,502	271,729		24	766,788
Mar-58	59,717	554,776	13,348	285,077		31	839,853
Apr-58	58,770	613,546	19,797	304,874		30	918,420
May-58	52,747	666,293	17,816	322,690		22	988,983
Jun-58	0	666,293	1,053	323,743		0	990,036
Jul-58	65,959	732,252	14,921	338,664		21	1,070,916
Aug-58	71,727	803,979	17,743	356,407		31	1,160,386
Sep-58	82,257	886,236	37,991	394,398		28	1,280,634
Oct-58	67,396	953,632	176,533	570,931		29	1,524,563
Nov-58	92,869	1,046,501	115,306	686,237		30	1,732,738
Dec-58	48,583	1,095,084	67,612	753,849		30	1,848,933
Jan-59	29,481	1,124,565	22,852	776,701		16	1,901,266
Feb-59	0	1,124,565	27,630	804,331		0	1,928,896
Mar-59	24,912	1,149,477	37,752	842,083		13	1,991,560
Apr-59	30,391	1,179,868	156,115	998,198		30	2,178,066
May-59	20,327	1,200,195	138,062	1,136,260		30	2,336,455
Jun-59	25,140	1,225,335	35,353	1,171,613		30	2,396,948
Jul-59	23,384	1,248,719	15,013	1,186,626		31	2,435,345
Aug-59	28,268	1,276,987	11,622	1,198,248		31	2,475,235
Sep-59	24,037	1,301,024	22,109	1,220,357		30	2,521,381
Oct-59	8,166	1,309,190	21,498	1,241,855		20	2,551,045
Nov-59	0	1,309,190	19,820	1,261,675		0	2,570,865
Dec-59	5,901	1,315,091	42,941	1,304,616		4	2,619,707
Jan-60	24,202	1,339,293	50,262	1,354,878		20	2,694,171
Feb-60	14,100	1,353,393	19,542	1,374,420		20	2,727,813
Mar-60	20,594	1,373,987	40,626	1,415,046		27	2,789,033
Apr-60	19,873	1,393,860	49,340	1,464,386		30	2,858,246
May-60	6,687	1,400,547	36,685	1,501,071		21	2,901,618
Jun-60	3,986	1,404,533	14,424	1,515,495		22	2,920,028
Jul-60	7,359	1,411,892	11,796	1,527,291		20	2,939,183
Aug-60	2,515	1,414,407	15,751	1,543,042		23	2,957,449
Sep-60	4,130	1,418,537	20,243	1,563,285		19	2,981,822
Oct-60	6,403	1,424,940	21,687	1,584,972		18	3,009,912
Nov-60	4,876	1,429,816	18,902	1,603,874		21	3,033,690
Dec-60	9,965	1,439,781	18,449	1,622,323		23	3,062,104
Jan-61	11,378	1,451,159	17,351	1,639,674	28,729	29.7	3,090,833
Feb-61	7,358	1,458,517	21,377	1,661,051	28,735	28	3,119,568

Mar-61	21,912	1,480,429	32,493	1,693,544	54,405	31	3,173,973
Apr-61	33,089	1,513,518	33,930	1,727,474	67,019	30	3,240,992
May-61	0	1,513,518	0	1,727,474	0	0	3,240,992
Jun-61	0	1,513,518	0	1,727,474	0	0	3,240,992
Jul-61	0	1,513,518	0	1,727,474	0	0	3,240,992
Aug-61	15,467	1,528,985	0	1,727,474	no logsheet	?	3,256,459
Sep-61	15,468	1,544,453	0	1,727,474	no logsheet	?	3,271,927
Oct-61	15,467	1,559,920	0	1,727,474	no logsheet	?	3,287,394
Nov-61	15,468	1,575,388	0	1,727,474	no logsheet	?	3,302,862
Dec-61	15,467	1,590,855	0	1,727,474	no logsheet	?	3,318,329
Jan-62	22,744	1,613,599	6,314	1,733,788		20	3,347,387
Feb-62	32,619	1,646,218	43,312	1,777,100		28	3,423,318
Mar-62	39,505	1,685,723	43,003	1,820,103		30	3,505,826
Apr-62	12,762	1,698,485	24,977	1,845,080		30	3,543,565
May-62	7,615	1,706,100	8,580	1,853,660		12	3,559,760
Jun-62	0	1,706,100	0	1,853,660		0	3,559,760
Jul-62	0	1,706,100	0	1,853,660		0	3,559,760
Aug-62	0	1,706,100	29,453	1,883,113		?	3,589,213
Sep-62	0	1,706,100	5,039	1,888,152		?	3,594,252
Oct-62	0	**1,706,100**	0	**1,888,152**		?	**3,594,252**
	Condensed %	**47.47%**	**Decanted %**	**52.53%**			
	= peak operations						
Source: Y/HG-0005 and Y/HG-0023 logsheets							
				Calculations Performed by		S M Clark	
					Date	6-5-95	
				Calculations Checked by			
					Date		

McLaren
1135 Atlantic Avenue
Alameda, CA 94501
415.521.5200
FAX 415.521.1547

Subject: AIR LOSSES FROM 81-10

By: TRM Date: 4/4/95 Sheet: 1 OF 3

AIR LOSSES FROM ROASTING AND DECANTING AT 81-10

S. FLACH 4/3/95

46-47% OF Hg WAS CONDENSED FROM ROASTING

ASSUME 46.5%

Actual Σ Totals	YEAR	TOTAL Hg RECOVERED (per Y/EX-24) p.93	RECOVERY FROM ROASTING 394,735 (actual Σ)	RECOVERY FROM DECANTING 264,464 (actual Σ)
659,199	1957	(+60,300?) 719,499	334 567	384 932
			700,349	489,385
✓1,189,734	1958	1,189,734 ✓	553 226	636 508
			220,007	550,767
✓770,734	1959	770,774 ✓	358 410	412 364
			124,690	317,707
✓442,397	1960	442,397 ✓	205 715	236 682
			109,699	146,526
25 6,225	1961	(-106,066?) 150,159	69 824	80 335
			151,207	202,053
~~353,260~~ 275,923	1962	(-28,615?) 324,645	150 960	173 685
	TOTAL	3,597,208 ✓	↓1.6% 1 672 702 ✓ 1,700,687	1 924 506 ✓

- ASSUMING UNITS ARE POUNDS. CHECK THIS!
  NOT SPECIFIED ON Pg 93 OF Y-EX/24
- 6 SIGNIFICANT FIGURE ACCURACY MAY BE SPURIOUS. CHECK THIS

FROM J. REECE UNION CARBIDE NUCLEAR MEMO OF 5/15/59 [Y/HG-0499] Pg 2 RESULTS OF TEST RUN

MERCURY RECOVERED 341 LB

RECOVERY + KNOWN LOSSES 371.1 LB

FURNACE EFFICIENCY = $\frac{341}{371.1}$ = .919 = E

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Subject: AIR LOSSES FROM 81-10

By: TRM Date: 4/4/95 Sheet 2 OF 3

∴ ROASTING FURNACE INPUT = RECOVERY / E

FROM PAGE 2, LOSS TO STACH GAS IS

$$\frac{.18\ LB}{371.1\ LB} = .000485 \quad \text{OR} \quad .0485\% \text{ OF INPUT}$$

REMAINING LOSS IS TO ASH OR SCRUBBER WATER
SCRUBBER WATER DISCHARGE SHOWS UP IN
WATER DISCHARGE MEASUREMENT

∴ ROASTING FURNACE LOSS IS

$$= .000485\left(\frac{\text{FURNACE RECOVERY}}{.919}\right)\#$$

$$= .000528 \cdot \text{FURNACE RECOVERY}$$

SO, AIR LOSS FROM ROASTING AT 81-10 IS
ESTIMATED AT:

YEAR		ROASTING AIR LOSS (LBS)
1957	4289	177
1958	3259	292
1959	1975	189
1960	1374	109
1961	1030	36,9
1962	1030	79.7
TOTAL		883 ✓

4-18-95 ESTIMATE OF 9201-4 + 9201-5 AIR EXHAUST LOSSES

McLaren
1135 Atlantic Avenue
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Subject: AIR LOSSES FROM 81-10

By: TAM Date: 4/4/95 Sheet: 3 OF 3

DETERMINE DETAILS OF DECANTING PROCESS

OUTDOORS?

INDOORS?

IN ENCLOSED VESSELS?

HOLDING TIME FOR DRAINING PROCESS?

Neal Dow

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

hw 9-8

M-80

To: J. S. Reece

Plant: Y-12

Date: May 15, 1959

Copies To: V. Defenderfer
File

Subject: 81-10 Operations on Solvent Contaminated Dirt

Y/HG-0499

The following is a summary of the work done at 81-10 on the solvent recovery from dirt which was excavated from 9201-2 grounds:

1. 120 drums of solvent contaminated dirt was prepared for the furnace by pulverizing and screening out the rocks.

2. On May 4, 1959, this material was started as feed to the furnace. At this time the entire 81-10 system was void of solvent.

3. On May 5, 1959, we added 1141 pounds of solvent to the system from outside sources in order to arrive at daily production figures by reading the sight glass on the solvent receiver.

4. On May 6, 1959, we removed 827 pounds of solvent from the receiver due to not being able to get accurate daily production figures by this method.

5. It was decided that we withdraw each days production from the receiver and weight.

6. The results of the operations are as follows:

Date	Drum Fed	Lbs of Feed	Vol. Feed (Cr. Ft.)	Production (Lbs.)
5-4-59	6	2184	33	Not Determined
5-5-59	16	5824	88	Not Determined
5-6-59	19	6916	104.5	Not Determined
5-7-59	18	6552	99	13
5-8-59	*17	6188	93.5	54
5-9-59	8	2912	44	53

* Started feeding uncontaminated carbon dust.
The operation was shut down from 11:30 A.M., 5-9-59 until 7:00 A.M. on 5-11-59 because of furnace ash removal problems.

5-11-59 at 9:30 A.M.

Total	84	30,576	462 (or 17.1 Cr Yds)	130

On 5-11-59 at 9:30 A.M., we started feeding 20 drums of solvent contaminated dirt which, according to visual determination, should have been richer than the above 84 drums.

5-11-59 and 5-12-59 results.

Total	20	7,280	110	100#

After the above 20 drums were fed and completely digested, the system was again cleaned up and a total of 425 pounds of solvent was withdrawn. This was 111 pounds of solvent in excess of the 314 pounds which was added from an outside source which was added to the overall daily production ---------- 111

Grand Total

104	37,856	572	341

7. Following is a summary of the actual recovery plus the known losses in comparison with the expected production according to Laboratory Analysis:

Analysis on Feed Dirt	2.25% Hg
Analysis on Furnace Ash	< .03% "
Analysis on Cyclone Ash	< .06% "
Analysis on Scrubber Water	.0025% Hg
Analysis on Stack Gases	14.11 gram/day

Expected production = 2.25% X 37,856# = 851.71 lbs Hg.

Actual production = 341.00 Lbs Hg.

Losses from Furnace Ash = 35,401# X .03% Hg. = 10.62 " "
Losses from Fly Ash = 2,184# X .06% Hg. = 1.31 " "
Losses from Scrabber H_2O = 719,712# X .0025% Hg. = 17.99 " "
Losses from Stack Gases = $\frac{14.11 \text{ gms X } 6}{454}$ = .18 " "

Total production + Known Losses = 371.10 " "

The known losses plus recovery = 43.55% of the expected yield according to the raw feed analysis. Due to the difficulty of sampling it, it is very improbable that a representative sample was analyzed. Also, due to the low percentage of Hg in the sample the laboratory's limit of error maybe high.

Based on 99% lab the feed was 95% Hg

8. Carbon dust was added to reduce oxygen content in furnace. After we started feeding carbon dust an analysis was made of the furnace draft. Results: Oxygen - 9.1%, Carbon Dioxide - 8.0%.

9. Results from the above operation:

   A. The recovery represents .9% of the dirt fed.

   B. The recovery plus the known losses represents .98% of the dirt fed.

   C. Based on the above, and for the above material, the furnace efficiency is approximately 91.8%.

VD:jr

CUMULATIVE SUMMARY OF SOLVENT RECOVERY FACILITY

1957	Days Operated	Drums Processed Current Month	Drums Processed To Date	Pounds Decanted Current Month	Pounds Decanted To Date	Pounds Condensed Current Month	Pounds Condensed To Date	Pounds To Alpha-4 Cascades Current Month	Pounds To Alpha-4 Cascades To Date	Pounds To Alpha-5 Cascades Current Month	Pounds To Alpha-5 Cascades To Date	Total Pounds Reclaimed Current Month	Total Pounds Reclaimed To Date	Operating Cost Current Month	Total Operating Cost To Date	Unit Cost Per Pound Current Month	Unit Cos Per Poun To Date
April	13	53	53	31,151	31,151	4,204	4,204	35,355	35,355	-0-	-0-	35,355	35,355	6,475	6,475	.183	
May	18	139	192	67,905	99,056	19,982	24,186	87,887	123,242	-0-	-0-	87,887	123,242	15,568	22,043	.177	
June	26	198	390	36,415	135,471	56,343	80,529	92,758	216,000	-0-	-0-	92,758	216,000	13,019	35,062	.140	
July	29	178	568	15,094	150,565	60,452	140,981	75,546	291,546	-0-	-0-	75,546	291,546	12,268	47,330	.162	
August	30	325	893	10,770	161,335	30,141	171,122	40,911	327,457	-0-	-0-	40,911	322,457	15,086	62,416	.369	
September	27	288	1,181	19,406	180,741	48,527	219,649	67,933	400,390	-0-	-0-	67,933	400,390	18,839	81,255	.277	
October	30	453	1,634	14,963	195,704	73,595	293,244	88,558	488,948	-0-	-0-	88,858	488,948	21,901	103,156	.247	
November	29	417	2,051	52,494	248,198	65,483	358,727	76,368	565,316	41,609	41,609	177,977	606,929	14,369	117,525	.122	
December	21	349	2,400	16,266	264,464	36,008	394,735	52,274	617,590	-0-	41,609	52,274	659,199	14,433	131,958	.276	
1958																	
January	26	416	2,186	4,763	269,227	54,801	449,536	-0-	617,590	59,564	101,173	59,564	718,763	12,265	144,223	.206	
February	24	327	3,143	2,502	271,729	45,523	495,059	12,461	630,051	35,564	136,737	48,025	766,788	8,642	152,865	.180	
March	31	433	3,576	13,348	285,077	59,717	554,776	-0-	630,051	73,065	209,802	73,065	839,853	13,293	166,858	.182	
April	30	425	4,001	19,797	304,874	58,770	613,546	-0-	630,051	78,567	288,369	78,567	918,420	13,094	179,252	.167	
May	22	253	4,254	17,816	322,690	52,747	666,293	60,460	690,511	10,103	298,472	70,563	988,983	11,732	190,984	.166	
June	-0-	-0-	4,254	1,053	323,743	-0-	666,293	1,053	691,564	-0-	298,472	1,053	990,036	8,259	199,243	7.843	
July	21	335	4,589	14,921	338,664	65,959	732,252	80,880	772,444	-0-	298,472	80,880	1,070,916	15,376	214,619	.190	
August	31	478	5,067	17,743	356,407	71,727	803,979	5,074	777,518	84,396	382,868	89,470	1,160,386	24,132	238,751	.270	
September	28	592	5,659	37,991	394,398	82,257	886,236	99,979	877,497	20,269	403,137	120,248	1,280,634	18,939	257,690	.157	
October	29	664	6,323	176,533	570,931	67,396	953,632	4,879	882,376	239,050	642,187	243,929	1,524,563	16,729	274,419	.069	
November	30	737	7,060	115,306	686,237	92,869	1,046,501	188,622	1,070,998	19,553	661,740	208,175	1,732,738	16,202	290,621	.078	
December	31	475	7,535	67,612	753,849	48,583	1,095,084	32,750	1,103,928	83,445	745,005	116,195	1,848,933	15,211	305,832	.131	
1959																	
January	16	192	7,727	22,852	776,701	29,481	1,124,565	-0-	1,103,928	52,333	797,338	52,333	1,901,266	6,768	312,600	.129	.164
February	0	0	7,727	27,630	804,331	-0-	1,124,565	18,868	1,122,796	8,762	806,100	27,630	1,928,896	2,757	315,357	.10	.163
March	13	158	7,885	37,752	842,083	24,912	1,149,477	62,664	1,185,460	-0-	806,100	62,664	1,991,560	5,987	321,344	.096	.161

Y/HG-418 Rec. 4-

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Of OAK RID

TO Mr. George Evans
LOCATION Building 9204-4

DATE July 7, 1953
ANSWERING LETTER DATE

ATTENTION
COPY TO Dr. J. W. Strohecker
Mr. W. K. Whitson, Jr. ✓

SUBJECT Solvent Recovery Proce
Drawings.

Enclosed you will find one (1) copy each of nine drawings; numbers E2e-15658, B2e-16236, D3f-16939a, D5f-16962a, D5f-16979a, D5f-16981a, D5f-16940a, D5f-17000, and D5f-17037. Five of these are revised drawings and the balance are drawings that were lacking in your files.

These drawings should give you one complete set of up to date drawings on the Solvent Recovery Process for your files.

R. E. Hulme

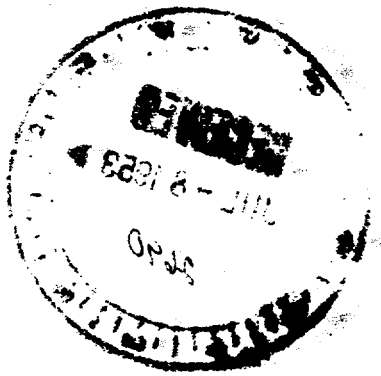
R. E. Hulme

REH:tcc

Enclosure.

Where are the drawings?

SMF 2/17



APPROVED FOR PUBLIC REL
9/
Technical Information Office Da

THIS FORM FOR INTER-COMPANY CORRESPONDENCE ONLY

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P OAK RIDGE, TENN.

M-810

TO J. M. Lister
LOCATION

DATE July 13, 1953

ANSWERING LETTER DATE

ATTENTION
COPY TO W. K. Whitson, Jr. Y-12RC [redacted]
J. M. Ebert
R. D. Williams
File

SUBJECT Summary of Chemical Recovery from May 25, 1953 to July 11, 1953.

Y/HG-0440

I. Source of information for Beta-4 alloy losses.

Bonnet losses were based on the CTF inventory figures of April 1, 1953 through April 15, 1953.

Cannisters and Scrubbing losses were based on information supplied by T. P. Sprague June 5, 1953.

Blender Station losses were based on the CTF inventory of April 1, 1953 through April 15, 1953.

II. Mechanical Failures of Bonnets.

The rate of failure for Beta-4 was based on the failures in CTF from May 1, 1953 to June 9, 1953.

III. Value of Alloy in Beta-4.

A cost curve was received from Dr. DeMarcus and this curve is the basis for all the cost figures that have been calculated on the losses for Beta-4.

IV. Equipment and Supplies

(1) At the present all the tanks originally called for have been set. The piping around these tanks will have to be changed to fit the future needs.
(2) The water scrubbers and sinks are expected to be shipped the middle of July.
(3) A list of equipment available in change house #9723-18 has been supplied to Mr. George Jasny.
(4) 4 acid tanks for cleaning bonnets are being made in Y-12.
(5) 6 dollies, with a filtering system built on them for the recovery of alloy from solvent oxide at the blender station, are being made in Y-12.
(6) 1 dolly for salvage pick up is being made in Y-12.
(7) A list of supplies needed in Chemical Recovery has been supplied to Mr. H. Fisher.

V. Job Break Down and Assignments

John Crowe	(1)	Calculation of losses, failure rates and loss by mixing of alloy.
	(2)	Making a note book of the information used in the calculations for Beta-4 Chemical Recovery.
	(3)	Vent gas header drain procedure.
J. A. White	(1)	Worked on salvage of alloy from solvent oxide.
	(2)	Records for Chemical Recovery area.
	(3)	Salvaging of assay samples.
R. Langham	(1)	Solvent Roaster procedure.
	(2)	Chemical Recovery tank procedure.
	(3)	Salvage of plant samples.
J. Ellison	(1)	Bonnet washing and handling procedure.
	(2)	Bonnet washing equipment.
	(3)	Moved family to Oak Ridge.
	(4)	Will work in CTF July 13 through July 26 as vacation relief.
C. Whitwill	(1)	Maintenance training.
	(2)	Bonnet washing and handling procedure.
	(3)	Bonnet washing equipment.
R. Baldwin)	(1)	Cannister change procedure.
K. Kahley)	(2)	Cannister change equipment.
	(3)	Salvage containers for sample and other salvage in cascade area.
	(4)	Salvage pick up traffic pattern.

IV. The present plan for the chemical recovery group in Beta-4 is to separate the alloy into assay levels and store the salvage in drums until a process for purification of the salvage is worked out.

G. E. Evans

GWE:wa

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P OAK RIDGE, TENN.

TO LOCATION J. M. Lister M-810

DATE August 10, 1953

ANSWERING LETTER DATE

ATTENTION

COPY TO W. K. Whitson, Jr. (Y-12RC)
J. W. Ebert
R. D. Williams
File

SUBJECT Chemical Recovery Progess Report Week Ending August 9, 1953

Y/HG-0413

I. Procedures were issued on August 8, 1953, to supervision and operators.

II. All Chemical Recovery operators were transferred from C.T.F. to 9204-4 during the week.

III. Bonnet washers and pumps are set. Some delay on the finishing of the bonnet washers due to trouble in getting pipe fittings. These fittings are expected in this week.

IV. One thousand and nine (1009) pounds of solvent was recovered and returned to the solvent area.

V. We have had trouble with F-852 and F-853 tanks running over. This is due to a 1 1/2" line connecting F-851 through F-855 to the sewer. This line is being changed to a 3" line and a 55-gallon stainless steel drum trap is being installed between the tanks and the sewer.

VI. When unstopping the floor drains, we found the sewer lines are either broken or eaten up. We forced air and water through the drains and when the air was on, water would bubble through the floor over most of the area.

G. W. Evans

GWE/jm

solutions may be effective decontaminants, but their use would result in the formation of considerable amounts of calomel which would probably be carried into the creek by entrainment in the floor drain water. From the literature, it appears that iodine adsorbed on activated carbon may be quite efficient in absorbing mercury vapor from the air, and this treatment could possibly be used in isolated areas where it is not necessary to wash down the floor.

A number of industrial floor and wall coatings have been obtained or are on order. These will be tested for their ability to provide a smooth, non-porous surface, resistant to caustic solutions. It appears that a good floor surface, which could be easily cleaned, might be obtained by covering the concrete with asphalt tile. Crack fillers are also being investigated.

No solutions have been found which materially aid in washing down mercury droplets deposited on a vertical surface. Common alkali metal soaps appear to be as effective as any detergent. The possibility of cleaning the floor by using a motor driven brush is being considered. This would either be incorporated into a vacuum cleaning device or a floor washer. For cleaning the grease and oil off motors and pumps, chlorinated solvents are quite effective but somewhat toxic. A proprietary compound known as "Gunk", which is an alkaline aqueous emulsion of a small percentage of some organic solvent, shows considerable promise for this job. Since it is an aqueous dispersion it can be removed by rinsing with water.

Apparatus is being set up with which to measure the efficiency and useful life of respirator canisters and cartridges. These measurements will be made as a function of both mercury and water vapor concentration. The same type of equipment should make it possible to evaluate the remaining useful life of a partially exhausted absorption element.

A General Electric mercury vapor meter has been altered to permit the (continuous sampling) examination of a small sample of air over an extended period of time. It has been found that when the mercury vapor is exposed to the ultraviolet light it reacts rapidly, supposedly with oxygen. This may reduce the usefulness of the modified meter as an analytical device, but it should still be useful for measuring the rate of absorption of mercury by various materials and by breathing if proper precautions are taken.

Mercury Recovery

Additional plant-scale experiments indicate that about 50% of the mercury in filter cakes can be recovered by drying with agitation in a birdbath evaporator. Probably a larger percentage could be recovered from the dense sludges collected from the bottoms of the filter feed tanks. A combination drying and distillation procedure carried out in a single piece of apparatus would probably result in the most economical recovery of the mercury. Such an apparatus would allow the wet sludge to be dried with gentle agitation and the separated mercury to be drained off. The temperature would then be raised, probably with the charge still gently agitated, and the remaining mercury distilled off.

If it becomes necessary to use mercury vapor control agents which result in the formation of large quantities of mercury salts, it will no doubt be necessary to thoroughly treat the floor drain water in order to remove the entrained, and perhaps dissolved, mercury.

M-94
Feb. 1956

Pending any re-evaluation of the scope of the proposed changes in light of a reduced premium on increased production, and the recent progress made in betterment of the mercury contamination problem, process engineering work is complete.

SOLVENT RECOVERY, ALPHA-4 AND ALPHA-5, (W. O. B-7131)

The quantities of solvent contained in discard materials such as filter press solids, evaporator feed tank sludges, and floor sweepings warranted initiation of design for a recovery system. It is estimated that a minimum of 15,000 lbs/mo. of solvent can be recovered from approximately 150 drums/mo. of accumulated salvage.

The recovery process is being designed for location in Building 81-10 which was previously used for a similar function. The original installation will be revised and reactivated to process the sludge by burning in a roaster, and recovering the solvent in a water cooled condenser.

CONTINUOUS SALVAGE PROCESS, BUILDING 9212, (W. O. B-6466)

Recent changes in the scope of the planned Daffodil continuous salvage facilities are as follows:

(1) The allowable diameter of new, low concentration safe storage tanks has been increased from 5" to 6". This change has reduced the number of new tanks required for storage capacity.

(2) The existing inter-column metering pumps have been found to be not economically adaptable to automatic control and are to be replaced with low capacity air-motor driven positive displacement pumps in the aqueous stream and centrifugal pumps in the organic stream. Installation of the new pumps is estimated to cost less than reconditioning and converting the existing pumps for auto-control.

(3) The extraction column tops and bottoms are being expanded from 4 to 7 inches to provide control stability and minimum organic carryover, respectively.

BULK CHEMICAL FACILITIES, (W. O. B-6414)

Equipment design and specifications for pumps, tanks, and an ammonia mixing station were completed in February. Cost estimates based on aqua-ammonia consumption in 1955, indicated an economy in preparing aqua-ammonia at the Y-12 Plant; however, the recent downward trend in aqua-ammonia usage reduces the freight savings to a level precluding a five-year amortization period for the installation. Consequently, new handling equipment for the

solutions through the existing manually controlled system were replaced with controlled capacity, rotary pumps. The immediate benefit evolved from the pump change is operating space and the anticipated benefit is longer pump shaft-seal life.

The piping and equipment layout was directed towards a modular type arrangement, with a module consisting of an extraction column, associated pumps and controls.

EXTRACT AREA CHANGES, BUILDING 9201-5

The Alpha-5 Extract System has been modified to function as a feed salt recrystallization system with the object of preparing acceptable feed. Basic changes to the existing system are an increase in the crystallizing and centrifuging capacity, and addition of a purified feed crystal redissolving tank and transfer station.

As a result of these changes, the capacity of the Extract System has been increased from 1,500 pounds of salt per hour to 4,000 pounds per hour of redissolved purified feed.

LOW PRESSURE NITROGEN APPLICATION, BUILDING 9727-3

A material balance around the nitrogen generating station located in Building 9727-3 indicated a monthly nitrogen loss of approximately 1,500,000 cubic feet. An investigation of loss sources in the operation revealed that approximately 90% of the computed loss, results from spillage when transferring liquid nitrogen to portable containers. The remaining 10%, or 150,000 cubic feet per month, is through tank vents and could be recovered. However, the capital costs for a recovery and distribution system are such as to require three to five years operation to break even. The economy of a recovery system is still less attractive in comparison with the previously proposed nitrogen generator, utilizing waste hydrogen, as generator nitrogen can be produced with very low operating costs.

SOLVENT RECOVERY, BUILDING 9201-4 and 9201-5

A recovery process has been designed for separating and purifying an estimated 35,000 pounds of mercury per month contained in approximately 200 drums of sludge. The contaminants are principly water, finely divided carbon, caustic salts, filter cloths and floor sweepings. The process provides for a shredder to reduce bulk contaminants to unfiform small size. The prepared sludge will be metered by a feed screw into a multiple-hearth, gas fired furnace. The contained moisture and solvent in the sludge will be vaporized and finely divided carbon will be burned. Combustion of the carbon will augment the gas-flame heat, however, no allowances in furnace capacity is being made because of the variability of carbon in the sludge feed.

Provisions are planned in the furnace to remove liquid mercury accumulation resulting from the coagulation of mercury droplets in dried sludge.

UCN-7721B
(2 1-86)

OAK RIDGE Y-12 PLANT INFORMATION CONTROL FORM

DOCUMENT DESCRIPTION (Completed By Requesting Division)

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M.D. McCay — Signature — 8/4/95 Date

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TABLE I

RELATIVE EFFICIENCY OF IMPINGEMENT-TYPE DEMISTER WITH AIRFOIL ELEMENTS AND YORKMESH DEMISTER

System Under Test	Li Passed (g./hr.)	Demisting Efficiency (%)	Gas Flow (cfm.)
Airfoil Elements	1.2	15	12.6
Yorkmesh (6-inches deep)	0.7	49	12.6
Airfoil Elements preceded by water atomizing nozzle at 150 psi.	0.29	80	12.6
Yorkmesh preceded by water atomizing nozzle at 150 psi.	0.19	81	12.6
Airfoil Elements preceded by water atomizing nozzle at 450 psi.	0.25	82	12.6

the voltage drop decreased to 4.7 volts in about two hours. Laboratory cells showed no difference of any kind between samples of solution taken during the two periods of operation.

Mercury Recovery

A small plate-and-frame filter press was set up to filter a portion of the waste stream which is pumped from the sump in back of Alpha-4 to the creek. The filter medium was paper and the filter effluent was sparkling clean. Pressure drop across the filter was very low and did not increase appreciably with time. The analytical results are somewhat in doubt but indicate that a good portion of the mercury can be removed by filtration.

LABORATORY AND BENCH-SCALE STUDIES

Cascade Feed

to provide winter heating are in progress. [illegible] supply fans have been installed, six in the roof and six in the fourth floor. These fans are operating with temporary power pending receipt of the new motor control centers. These fans supply additional air to the decomposer areas. Four vaneaxial fans which serve to boost the supply air from the fan rooms are installed and operating on temporary [illegible] exhaust fans have also been installed and are operating

Data for several of the tests are shown in Figure 2.

M-125

CATALYTIC CONSTRUCTION COMPANY
PHILADELPHIA 2, PENNSYLVANIA

Y/HG-0059

ALPHA 5 - PROJECT
OAK RIDGE, TENNESSEE

JOB UNIT NUMBER 4140 - UCNC W. O. B-7131

TITLE SOLVENT SALVAGE FACILITY
BUILDING NO. 81-10

SPECIFICATION B-7131-L-1

DESCRIPTION MULTIPLE HEARTH FURNACE

ORIGINAL ISSUE DATE July 30, 1956

APPROVED FOR PUBLIC RELEASE
Technical Information Office
3/24/94 Date

APPROVED BY CATALYTIC CONSTRUCTION COMPANY

P. S. LINDSEY, JR. DATE 10/22/56

RECEIVED
OCT 23 1956
PROJECT ENGR.

APPROVED BY UNION CARBIDE NUCLEAR COMPANY

/s/ G. B. Lockhart DATE 8-3-56

APPROVED BY ATOMIC ENERGY COMMISSION

/s/ R. B. Somers DATE 8-6-56

UNCLASSIFIED

Rev. #3 - 10-19-56 - Page 7 - As Per Meeting of 10-17-56 with Vendor's Representative and Letter of 10-19-56 Covering Changes
Rev. #2 - 9-26-56 - Pages 1, 2, 5, 6, 7; 11-A Added - To Conform to Vendor's Proposal
Rev. #1 - 8-13-56 - Pages 1, 9, 10 and 11 - Changed Item Number Prefix

CONTRACT #4100

CERTIFIED FOR CONSTRUCTION

OCT 22 1956

SECTION 1 - SCOPE:

This specification covers the design, fabrication and delivery of one (1) multiple hearth furnace complete with mechanical drive, gas combustion equipment, forced draft fan, charge feeder and hopper, calcine outlet gate and asbestos cloth dust hood and shaft cooling air fan. (2)

SECTION 2 - EQUIPMENT INCLUDED:

Equipment	Item Number	Location	
Multiple Hearth Furnace Complete	7131-L-1	Building 81-10	(1)
Furnace Drive Mechanism:			
Speed Reducer	7131-L-1-A		(1)
Speed Reducer Motor	7131-NL-1-A		(1)
Forced Draft Fan	7131-L-1-B		(1)
Forced Draft Fan Motor	7131-NL-1-B		(1)
Charge Feeder and Hopper:			
Screw Feeder	7131-L-1-C		(1)
Screw Feeder Motor	7131-NL-1-C		(1)
Charge Hopper	7131-L-1-D		(1)
Gas Combustion Equipment	7131-L-1-E		(1)
Calcine Outlet Gate	7131-L-1-F		(1)
Asbestos Cloth Dust Hood	7131-L-1-G		(1)
Shaft Cooling Air Fan	7131-L-1-H		(2)
Shaft Cooling Air Fan Motor	7131-NL-1-H		(2)

SECTION 3 - MANUFACTURER/VENDOR RESPONSIBILITIES:

3-A Material and Workmanship Warranty

1. Warranty on workmanship and all material and equipment described herein shall be for one year from date of installation or two years from date of shipment, whichever occurs first.

2. All defective parts shall be replaced at the Vendor's expense provided such defective parts have been given normal and proper usage.

3. This specification calls for the purchase of new equipment throughout.

4. This material warranty supplements any other material warranty clause included within this specification.

3-B Performance Guarantee

Unless specific exception is recorded by the Vendor in his proposal and provided such exceptions are noted in the purchase order, it shall be understood that he guarantees and agrees to the following:

1. The equipment described herein shall be guaranteed to meet the operating conditions and requirements as specified herein.

2. Performance tests, under specified conditions of service, may be conducted by the purchaser within 30 days after initial operation. If a unit fails to perform as specified after Vendor has had a reasonable opportunity to remedy any defects at his own expense consistent with Security requirements, it is hereby understood and agreed that the Vendor shall accept return of the unit and refund the full amount of the purchase price.

3-C Equipment Marking

1. All equipment, parts and appurtenances included herein shall be plainly labeled with a securely attached metal tag bearing the equipment item number.

2. Each unit shall be crated securely and independently of other units to prevent damage in shipment.

3. Crates and packages shall be appropriately marked with ink, paint or indelible material.

SECTION 4 - WORK TO BE DONE BY MANUFACTURER/VENDOR:

4-A The Manufacturer/Vendor shall design, fabricate and deliver the equipment described herein. All special tools and equipment required for dismantling and maintenance as well as the specified drawings, parts lists, manuals, etc., shall be supplied.

4-B The Manufacturer/Vendor shall complete and return one (1) copy of Motor Data Sheets 4D9-283, 4D9-284, 4D9-285 and 4D9-289 with each copy of bid submitted. (2),

SECTION 5 - WORK TO BE DONE BY OTHERS:

5-A Erection and installation of equipment.

5-B Motor starters and wiring.

5-C Temperature measuring instruments and recorders.

SECTION 6 - OPERATING CONDITIONS & REQUIREMENTS:

The multiple hearth furnace shall be of vertical, self-supporting type, completely furnished with mechanical drive, gas combustion equipment, forced draft fan, charge feeder, charge hopper and calcine gate, etc., and shall be designed and fabricated in accordance with the following criteria:

6-A Operating Conditions

1. Feed

The charge material will be a wet sludge and at times will contain pieces of filter paper, filter cloth and graphite lumps up to 1/2-inch in size; its composition will be as follows:

	Wt. %
Water	40.0 - 58.0
Metal carbonates, finely divided graphite and anthracite	10.0 - 12.0
Volatiles (which are vaporized in the furnace)	50.0 - 30.0
Latent heat- 125 Btu/lb.	
Specific Heat - 0.333 Btu/lb.	

Bulk density - 75 - 200 lb/cu.ft.
Feed Rate - 500 lb/hr. (2.5 to 7.5 cu.ft./hr.)
Residence Time - 2 hrs. minimum

Processing of the feed will involve essentially a drying operation for removal of the water and distillation operation for recovery of the other volatiles.

2. Temperatures

Hearth - Max. 1550° F
Exhaust gas - 950°F - Min.

3. Pressure

The furnace shall be operated at a negative pressure of (0.10) inches of water as measured at the top hearth.

4. Services Available

Natural gas up to 30 psig with a calorific value of 1055 Btu/cu.ft. (dry basis) a specific gravity of 0.6, and of the following composition:

	% Volume
CH_4	94.51
C_2H_6	3.31
Propane	0.78
Iso-butane	0.18
N-butane	0.21
Iso-pentane	0.03
Hexane	0.05
Heptane	0.04
N_2	0.18
CO_2	0.68

Ground elevation at job site - 1000 ft.

5. Calcine and Non-Combustibles

Bulk density - approx. 70 lb/cu.ft.
Accumulation rate - up to 60 lb/hr.

6-B Performance

When operating within the limits of the specified operating conditions, the furnace shall be capable of processing the charge materials on a continuous 24-hour basis. The furnace shall be provided with features to exclude the infiltration of air and permit the maintenance of reducing atmosphere in the hearth zone. All equipment furnished shall be suitable for outdoor operation.

6-C Physical Details

The furnace shall consist of multiple circular refractory hearths, of the proper size, placed one above another, and enclosed within a cylindrical steel shell lined with suitable refractory insulating materials. Rabble arms supported on a vertical shaft passing through the center of the hearths shall be employed for moving the charge through the hearths. The discharge from the bottom hearth shall pass through a sealed, gate-controlled chute into a 55 gallon drum.

Charge materials shall be fed into the furnace by means of a variable capacity screw type conveyor through a closed chute.

1. Shell and Supports

The shell, including the bottom plate, shall be fabricated of medium carbon steel plate with all joints welded gas tight. Suitably located inspection doors, burner openings, and openings for temperature measuring instruments of the radiation pyrometer or thermocouple type shall be provided for in the shell body for each hearth. The inspection doors shall be of gas tight gasketed construction and equipped with a peep-hole having a close-fitting sliding-type cover.

Structural steel columns shall be provided for supporting the furnace together with a platform to support the shell, the bottom shaft bearing, and the speed reducer.

2. Charge Feeder and Hopper

The feeder mechanism shall be a horizontal ribbon screw type feeder, of steel construction, totally enclosed, and capable of delivering a feed quantity of 2.5 to 7.5 cubic feet per hour. Provision shall be made for varying the feed rate by means of a controlled variable speed drive. (2)
Feeder and drive shall be protected against mechanical injury in case of jamming or overloading.

Flanged connections shall be provided at both the top inlet and bottom discharge ends of the feeder. The top inlet shall be connected to a feed hopper having a capacity of at least eight (8) cubic feet. Feed hopper construction shall be of plate steel.

Supports shall be provided for mounting the feeder and hopper on top of the furnace.

The feed inlet to the furnace shall be fabricated of Type 304 stainless steel and provided with a flange to fit the flanged discharge end of the charge feeder.

3. Refractory Lining

The furnace shell shall be lined internally with a layer of super-duty fireclay brick, Harbison-Walker Brand "Alamo" or equal, and a layer of insulating brick, the combination of which should be capable of maintaining the temperature of the outside shell at less than 200° F when the inside refractory temperature is maintained at about 1600° F. Out

drop holes should be formed of castable refractory suitable for service at temperatures of about 1600° F. Fire brick and hearth refractory shall be suitable for caustic service.

The furnace bottom shall be provided with a layer of dry sand topped with a castable refractory layer to form the bottom hearth. The top of the furnace shall be a flanged, medium carbon steel plate covered internally with a castable refractory layer and an insulating layer of Johns-Manville Superex blocks or equal.

The furnace hearths shall be constructed of castable refractory, Harbison-Walker Extra-strength castable or equal, and shall be constructed in the field on forms furnished by the Vendor.

4. Drive Mechanism, Rabble Arms and Shaft

The furnace drive mechanism shall consist of a bevel gear splined to the central shaft below the bottom hearth of the furnace. Provision shall be made for driving the bevel gear through a speed reducer with a 190 to 1 reduction. A shaft speed variation of 3 to 1 shall be provided by means of a varispeed motor pully (Reeves or equal). Provision shall also be made for a shear pin in the drive which will be set to break if the rabble arms meet with an obstruction.

The central drive shaft shall be constructed of ductile iron, Grade 80-60-03, and insulated with a castable refractory material. Shaft openings at the top and bottom of the furnace shall be provided with suitable seals to prevent gas leakage. Cast heat-resistant alloy lutes shall be provided to seal the central shaft openings at all the "out" hearths.

Four rabble arms shall be provided for each of Hearths #1 and #2 (2)
and two rabble arms shall be provided for each of Hearths #3, #4, (2)
#5, #6, #7 and #8, designed to fit into the central shaft and held by retaining pins. Pins and arms shall be removable and replaceable through the hearth access doors. The rabble arms as well as the rabble teeth or plows shall be fabricated of a heat resistant alloy of the following approximate analysis: 25% chrone, 12% nickel (2)
with the balance essentially iron.

5. Forced Draft Fan

A motor driven forced draft fan shall be provided capable of supplying the volume of free air required for combusion purposes. (2)

Both fan and motor shall be capable of twenty-four hour continuous duty operation. The connections between the fan and the base of the furnace shaft shall also be provided.

Provision shall be made for adjusting the quantity of air fed to the furnace.

6. Calcine Outlet and Outlet Gate

The calcine outlet shall be fabricated from a heat resistant high alloy steel and shall be connected to a positive closing calcine outlet gate through a flanged connection. A sealed connection such as an asbestos cloth hood, shall be provided between the calcine gate and an adapter ring for a standard 55 gallon drum which will be used as the calcine receiver. It shall be possible to remove and replace the drum receiver without any leakage of air into the furnace while the furnace is operating. The calcine outlet shall be located oblique to the furnace floor so as to discharge clear of furnace drive mechanism and supports.

7. Gas Outlet

The gas outlet from the furnace shall be suitably sized and provided with a flanged connection. The outlet shall be located at the top of the furnace. (2)

8. Gas Combustion Equipment

Gas burners shall be provided and located as required. The burners shall be of a type such that firing on a hearth may be regulated independently of any other hearth, with a minimum turn-down ratio of 10 to 1. Burner boxes shall be sealed to the furnace shell. In addition to the burners, auxiliary equipment required for mixing and regulating the fuel shall be provided. The burner auxiliary equipment shall be capable of controlling combustion conditions to maintain air-gas proportions. (3)

Combustion safe-gurarding devices shall be furnished to provide immediate shut-off of the fuel supply when power and/or combustion fails and permit fuel flow only when combustion can take place safely. The safety devices should include spark ignition of the pilot flame, pilot view-windows, "Firetron" type detectors, manual re-set shut-off safety valves, an audible alarm, and automatic purge timing. (3) Pilot lights should be supplied through separate regulators. (3) "Firetron" detectors are manufactured by Combustion Control Corporation.

9. Center Shaft Cooling Air Fan

A fan and motor will be furnished to provide air for cooling the center shaft. (2)

9. Painting and Finish

All exterior surfaces shall be given a shop coat of red lead and oil, or equivalent protective coating, before shipment. All exposed machined parts shall be given a protective coating of a rust preventative material before shipment, suitable for corrosion prevention under outdoor conditions.

10. Materials of Construction

Copper and copper alloy materials of construction shall not be employed where there is a possibility of contacting the charge materials and process vapors.

SECTION 7 - INSPECTION:

Inspection is required by the Architect-Engineer prior to shipment. The Architect-Engineer shall be advised of shipping date at least two (2) weeks prior to shipment.

SECTION 8 - REFERENCE SPECIFICATIONS:

The following Catalytic Construction Company specifications form a part of this specification:

4100-DD-1 - Welding Procedure & Quality Required
4100-N-19 - Electric Motors

CC-48

CATALYTIC CONSTRUCTION CO.

ENGINEERING DIVISION

MOTOR DATA

FOR Furnace Drive - Speed Reducer — JOB NO. 4140
LOCATION Building No. 81-10 — SHEET NO. 4D9-283
SERVICE Continuous — DATE
NO. REQUIRED One (1) — BY

PERFORMANCE

	FULL LOAD	75% LOAD	50% LOAD
EFFICIENCY PERCENT			
POWER FACTOR PERCENT			

MOTOR SPECIFICATION

MOTOR TO BE FURNISHED IN ACCORDANCE WITH SPECIFICATION NO. 4100-N-19

MANUFACTURER
RATED H. P. — VOLTS 440 — PHASE 3 — CYCLES 60
TYPE Totally Enclosed - Fan Cooled

SYNCHRONOUS R. P. M.
FULL LOAD R. P. M.
RISE DEGREE CENTIGRADE
ALTITUDE
FRAME NO.
SERIAL NO. (1) — OUTLINE DWG. NO.

FULL LOAD TORQUE
STARTING TORQUE
PULL OUT TORQUE

FULL LOAD CURRENT
STARTING CURRENT
LOCKED ROTOR CURRENT

ROTATION — FACING COUPLING END.
BEARINGS
LUBRICATION
INSULATION
BASE
COUPLING FURNISHED BY
WEIGHT

REMARKS

Item No. 7131-NL-1-A
For Outside Installation

CC-48

CATALYTIC CONSTRUCTION CO.

ENGINEERING DIVISION

MOTOR DATA

FOR Furnace - Forced Draft Fan — JOB NO. 4140
LOCATION Building No. 81-10 — SHEET NO. 4D9-284
SERVICE Continuous — DATE
NO. REQUIRED One (1) — BY

PERFORMANCE

	FULL LOAD	75% LOAD	50% LOAD
EFFICIENCY PERCENT			
POWER FACTOR PERCENT			

MOTOR SPECIFICATION

MOTOR TO BE FURNISHED IN ACCORDANCE WITH SPECIFICATION NO. 4100-N-19

MANUFACTURER
RATED H. P. — VOLTS 440 — PHASE 3 — CYCLES 60
TYPE Totally Enclosed - Fan Cooled

SYNCHRONOUS R. P. M.
FULL LOAD R. P. M.
RISE DEGREE CENTIGRADE
ALTITUDE
FRAME NO.
SERIAL NO. — OUTLINE DWG. NO.

FULL LOAD TORQUE
STARTING TORQUE
PULL OUT TORQUE

FULL LOAD CURRENT
STARTING CURRENT
LOCKED ROTOR CURRENT

ROTATION — FACING COUPLING END.
BEARINGS
LUBRICATION
INSULATION
BASE
COUPLING FURNISHED BY
WEIGHT

REMARKS

Item No. 7131-NL-1-B (a)
For Outside Installation

CC-48

CATALYTIC CONSTRUCTION CO.

ENGINEERING DIVISION

MOTOR DATA

FOR Furnace - Screw Feeder
LOCATION Building No. 81-10
SERVICE Continuous
NO. REQUIRED One (1)

JOB NO. 4140
SHEET NO. 4D9-285
DATE
BY

PERFORMANCE

	FULL LOAD	75% LOAD	50% LOAD
EFFICIENCY PERCENT			
POWER FACTOR PERCENT			

MOTOR SPECIFICATION

MOTOR TO BE FURNISHED IN ACCORDANCE WITH SPECIFICATION NO. 4100-N-19

MANUFACTURER
RATED H. P. VOLTS 440 PHASE 3 CYCLES 60
TYPE Totally Enclosed - Fan Cooled

SYNCHRONOUS R. P. M.
FULL LOAD R. P. M.
RISE DEGREE CENTIGRADE
ALTITUDE
FRAME NO.
SERIAL NO. OUTLINE DWG. NO.

FULL LOAD TORQUE
STARTING TORQUE
PULL OUT TORQUE

FULL LOAD CURRENT
STARTING CURRENT
LOCKED ROTOR CURRENT

ROTATION FACING COUPLING END.
BEARINGS
LUBRICATION
INSULATION
BASE
COUPLING FURNISHED BY
WEIGHT

REMARKS

Item No. 7131-NL-1-C (1)
For Outside Installation

CC-48

CATALYTIC CONSTRUCTION CO.
ENGINEERING DIVISION

MOTOR DATA

Job No. 4140
Spec. B-7131-L-1
Page 11-A of 12
September 26, 1956

FOR Shaft Cooling Air Fan
LOCATION Building No. 81-10
SERVICE Continuous
NO. REQUIRED One (1)

JOB NO. 4140
SHEET NO. D9-289
DATE
BY

PERFORMANCE

	FULL LOAD	75% LOAD	50% LOAD
EFFICIENCY PERCENT			
POWER FACTOR PERCENT			

MOTOR SPECIFICATION

MOTOR TO BE FURNISHED IN ACCORDANCE WITH SPECIFICATION NO. 4100-N-19

MANUFACTURER
RATED H. P. VOLTS 440 PHASE 3 CYCLES 60
TYPE Totally Enclosed

SYNCHRONOUS R. P. M.
FULL LOAD R. P. M.
RISE DEGREE CENTIGRADE
ALTITUDE
FRAME NO.
SERIAL NO. OUTLINE DWG. NO.

FULL LOAD TORQUE
STARTING TORQUE
PULL OUT TORQUE

FULL LOAD CURRENT
STARTING CURRENT
LOCKED ROTOR CURRENT

ROTATION FACING COUPLING END.
BEARINGS
LUBRICATION
INSULATION
BASE
COUPLING FURNISHED BY
WEIGHT

REMARKS

Item No. 7131-NL-1-H
For Outside Installation

CATALYTIC CONSTRUCTION COMPANY
PHILADELPHIA 2, PENNA.

VENDOR DATA REQUIREMENTS

DATA AND DRAWINGS REQUIRED	COPIES WITH BID (*)	COPIES FOR APPROVAL	AFTER APPROVAL: ONLY COPIES OF PRINTS	AFTER APPROVAL: REPRODUCIBLE TRACING	COPIES REQ'D W/O APPROVAL
1. DIMENSIONED OUTLINE DWGS.	2	4	4		
2. CROSS-SECTIONAL DWGS.					
3. SCHEMATIC PIPING DIAGS.					
4. SCHEMATIC WIRING DIAGS.		4	4		
5. SHOP DETAIL DWGS.		4	4		
6. ASSEMBLY DWGS.		4	4		
7. MANUFACTURER'S DATA AND/OR TEST REPORTS					4
8. CERTIFIED TEST & INSPECTION REPORTS					4
9. STANDARD PERFORMANCE CURVES -GAS CONSUMPTION REQMTS	2		4		
10. CERTIFIED PERFORMANCE CURVES					
11. OPERATING, MAINTENANCE AND LUBE. MANUALS			4		
12. RECOMMENDED SPARE PARTS FOR ONE (1) YEAR NORMAL MAINTENANCE W/PRICES			4		
13. FOUNDATION LOADING REQUIREMENTS AND/OR DIAGS.	1	4	4		
14. DETAILED PARTS LIST					
15. CORROSION DATA					
16. COMPLETED EQUIPMENT DATA SHEETS	1				
17. CATALOGUE INFO., CUTS, PHOTOGRAPHS, ETC.					

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UNION CARBIDE NUCLEAR COMPANY
Installation
P. O. Box Y

REPORT of EXCESS

Page 1 of
Date

Line Item #	Catalog Number or Property Number	Quantity & Unit	Condition Code	DESCRIPTION	Acquisition Cost Unit Cost	Acquisition Cost Total Cost
				Parts for Furnace, Gas, 54", 8 Hearth Herreshoff Vertical, Bill of Material #N-4764, Nichols Engineer & Research Corp.		
1	07-408-1200	280 Ea.	N-1	Brick, Circle, Item No. 2	$ .19	$ 53.20
2	07-408-1205	491 Ea.	N-1	Brick, Circle, Item No. 3	.19	93.29
3	07-408-1215	168 Ea.	N-1	Brick, Splits, 9" x 4 1/2" x 1 1/4", Item No. 6	.19	31.92
4	07-408-1225	115 Ea.	N-1	Brick, Straight, 9" x 4 1/2" x 2"	.19	21.85
5	07-408-1230	265 Ea.	N-1	Brick, Straight, 9" x 4 1/2" x 2 1/2"	.27	71.55
6	07-408-1235	177 Ea.	N-1	Brick, Straight, 9" x 4 1/2" x 3"	.19	33.63
7	07-413-5340	1828 Ea.	N-1	Cloth, Cotton Rag, Disc, Grade A-3, 1" Dia Hole, 8 3/8" OD, Thick Porous, Rapid, Creped, Soft, Strong, Sparkler Manufacturing Filter Disc	.02	36.56
				Filter, Air, Fiberglas, Media, Disposable, Owens-Corning Fiberglas Corp.		
				Width / Length / Thickness		
8	07-644-7292	48 Ea.	N-1	8" / 23 3/4" / 1"	.65	31.20
9	07-644-7312	47 Ea.	N-1	9 1/2" / 33 1/4" / 1"	.97	45.59
10	07-644-7322	48 Ea.	N-1	9 1/2" / 45 1/2" / 1"	1.28	61.44
11	07-644-7362	18 Ea.	N-1	9 5/8" / 41 5/8" / 1"	.87	15.66
12	07-644-7512	78 Ea.	N-1	12 1/16" / 21 3/4" / 1/2"	.42	30.24
						$ 526.13

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Document No. Y/TS-1497/DEL REV | Author's Telephone No. 6-0263 | Acct. No. 2366000 3 | Date of Request 4/18/96

Unclassified Title: 81-10 FURNACE - NICHOLS ENGINEERING FILES (VENDOR FILES)

Author(s) Requestor: Steve Wiley

TYPE: ☐ Formal Report ☐ Informal Report ☐ Progress/Status Report ☐ Co-Op Report ☐ Thesis/Term Paper

☐ Oral Presentation (identify meeting, sponsor, location, date):

☐ Journal Article (identify Journal):

☒ Other (Specify): To Be Released to ChemRisk, Phase II

Document will be published in proceedings ☑ No ☐ Yes

Document will be distributed at meeting ☑ No ☐ Yes

Document has patent or invention significance ☑ No ☐ Yes (Identify)

Document has been previously released ☑ No ☐ Yes (Reference)

DIVISION REVIEW AND APPROVAL (Completed By Requesting Division)

TECHNICAL CLASSIFICATION REVIEW (Divisional Classification Representative)

Title(s): U Abstract: NA

DOCUMENT: Level U Category ~

R J Fraser — Signature — 4/22/96 Date

DOCUMENT REQUEST APPROVED (Division or Department)

Signature — 4/18/96 Date

Signature — Date

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APPROVAL AND RELEASE

Date Received | Date Initiated 4/18/96

☐ Editor — Date

☒ Waived / P. McKenney — Patent Office — Date

☐ — Date

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R Barker SV — Y-12 Classification Office — 4/23/96 Date

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Conditions/Remarks:

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P OAK RIDGE, TENN.

TO Mr. C. H. Roddy
LOCATION Engineering - 9739

DATE July 23, 1953

ANSWERING LETTER DATE

ATTENTION

COPY TO Mr. R. E. Hulme
Mr. J. W. Minchey
File

SUBJECT W. O. 540703 - Bldg. 8110
Nichols Engineering and
Research Corporation

We are distributing information regarding subject order as follows:

Mr. C. H. Roddy - 2 ea. of Dwg. A-5405 - Calcine Bin, dated 6-4-53,
2 ea. of Dwg. A-5406 - Asbestos Cloth Dust Hood, dated 6-5-53,
2 ea. of Dwg. A-5409 - Feed Inlet Conversion, dated 6-16-53,
2 ea. of Dwg. A-5408 - Lower Gas Seal, dated 6-10-53,
2 ea. of Dwg. A-5411 - Feeder Base Plate, dated 6-18-53,
2 ea. of Dwg. A-5407 - Calcine Outlet Gate, dated 6-5-53,
2 ea. of Dwg. A-5403 - Furnace Shell Details, revised 6-22-53
and 2 ea. of Dwg. A-5402 - General Assembly, revised 6-22-53.

Mr. R. E. Hulme and Mr. J. W. Minchey have already received their copies of the above drawings.

W. L. Morgan

WLM:vb

INSTRUCTIONS

FOR

NICHOLS HERRESHOFF MULTIPLE HEARTH FURNACE

SIZE 54" I.D. - 8 HEARTH

FOR

CARBIDE AND CARBON CHEMICAL COMPANY

OAK RIDGE

TENN.

SUBJECT		
Furnace, Hearth		
VENDOR		LOCATION
Nichols Engr. & Res. Corp		9204-4
V. S. NO.	P.O.CO.	P. O.
	Carbide	34195
SPEC.	REQUIS. NO.	

NICHOLS ENGINEERING AND RESEARCH CORPORATION

70 PINE STREET, NEW YORK, N.Y.

JULY, 1953

NICHOLS HERRESHOFF MULTIPLE HEARTH FURNACE

SIZE 54" I.D. 8 HEARTH

These instructions relate primarily to drying out, warming up, cooling down and lubrication of the furnace.

Detailed instructions for calcining operation are not included as sufficient information regarding the materials to be treated and the operations to be performed in the furnace was not available.

THE NICHOLS HERRESHOFF FURNACE

The furnace consists of eight circular refractory hearths, 54" diameter, placed one above another and enclosed within a cylindrical steel shell. Through the center of the hearths passes a rotating vertical shaft carrying arms to which are attached rabble teeth for stirring the charge and advancing it along the hearths.

The furnace is heated by combustion gases from gas burners, admitted through ports at selected hearths.

The materials to be treated are fed onto the top hearth by means of a motor driven star feeder, with 1.5 speed variation for regulation of the feed rate. The charge material passes into the furnace through a closed chute, forming a seal to prevent gas leakage through the feed opening.

Calcined product is removed through a drop hole in the bottom hearth to a chute with a control gate.

The charge feeds onto the top (No. 1) hearth at its periphery, is rabbled in toward the center and falls to No. 2 hearth through the drop hole opening between the inner rim of the hearth and the central shaft. On No. 2 hearth it is rabbled out to the drop holes at the periphery. The material is rabbled in this manner across each of the eight hearths, to be discharged from the bottom hearth through a single outlet. It passes through a sealed, gate controlled chute to a calcined storage hopper.

On odd numbered hearths the charge is rabbled in toward the center; these hearths are therefore called "IN" hearths. Even numbered hearths are "OUT" hearths. The rabble teeth on each hearth are set at a suitable angle to the axis of the arm to turn the charge in the proper direction.

The central shaft is supported on a step bearing below the furnace and is held in line by a bearing above the top hearth. It is driven through a bevel gear attached at the lower end. The bevel pinion shaft is driven by variable speed drive for varying the speed of rotation of the shaft. A shear pin in the drive is set to break if the arms meet with an obstruction.

At the top of the furnace the shaft opening is closed by a sand seal. Beneath the bottom hearth the shaft opening is sealed by means of a packed stuffing box. These seals should be checked daily and adjusted as required to prevent leakage.

The rabble arms, two on each hearth, fit into machined sockets in the central shaft and are retained by a pin. Pins and arms can be removed and replaced through the access doors, without cooling the furnace.

The central shaft is hollow, and is provided with passages for the continuous flow of cooling air, circulated by natural draft. If temperatures above 150°F should be employed, forced draft cooling by fan will be necessary. A cooling fan can be connected to the exhaust opening in the top of the shaft.

Lute caps attached to the shaft at each of the "CUT" hearths prevent leakage of charge material through the slight clearance opening between shaft and hearth.

Rabble teeth are separate castings provided with channel shaped sides which fit over the bottom flange of the arm. They are held in place by the outermost teeth on each arm, which are fastened with alloy pins. The blades are set at an angle to the longitudinal axis of the arm, the "IN" and "OUT" teeth being opposite hand.

Gases from the burners and from the material under treatment pass up through the drop holes counter current to the solid materials, and leave the furnace through the gas outlet on the top hearth.

LUBRICATION

Before starting up the equipment for the first time or after a long shut-down, every moving part must be thoroughly lubricated.

While the furnace is in operation, each lubrication points should be serviced on a regular schedule. These points are listed on the attached chart with the type of lubricant and servicing schedule. Motors and auxiliary

equipment should be lubricated according to manufacturers instructions.

DRYING OUT THE FURNACE

The brickwork must be thoroughly dried out and brought slowly up to operating temperature to prevent damage. Particular care is necessary at the initial starting as freshly laid brickwork has a high moisture content. The following instructions should be followed.

1. Inspect each hearth, removing any loose brick or other foreign objects.

2. Check all lubrication points.

3. Turn the shaft by hand for a full revolution to check clearance. Rabble teeth should clear the hearth by approximately one inch.

4. Start furnace and fan by power, and operate them for sufficient length of time to be sure that all moving parts are in good working order.

5. Build small wood fires on the hearths. The process of drying out will take several days, since there is a good deal of moisture in the brick and it must be heated very slowly. It is almost impossible to make the fires too small at the start.

6. During the drying out period, turn the central shaft by hand every six or eight hours to be sure everything is working freely. Be sure that the wood fires do not come in contact with the rabble arms, rabble teeth or other metal parts, nor interfere with the rabble teeth.

7. Move the fires around to various parts of the hearths, so the brick will be heated uniformly.

WARMING UP THE FURNACE

After the furnace is thoroughly dried out it may be slowly heated to operating temperature. Start the lowermost gas burners very slowly to heat the furnace gradually and uniformly. In starting up, care must be taken to avoid an accumulation of combustible gas in the furnace. When opening a door the operator should stand at one side to avoid a possible flare out. Operators should wear face shields when looking into the furnace.

As each burner is lighted the operator should check to see that it is properly centered in the burner tile and that the flame passes through the center of the opening without impinging on the sides.

The temperature rise should not exceed 20°F per hour on the burner hearth for the first twelve hours. It may then be increased to 30°F per hour until the furnace has reached 1200°F. Thereafter the furnace may be brought up to operating temperature at the rate of 40°F per hour.

During the drying and warming up period the gas outlet damper will require adjustment at intervals to keep a minimum draft consistent with suitable temperature rise rate.

The central shaft must be kept rotating while heat is on the furnace, to prevent warping.

STAND BY

If the furnace is to be out of operation for a short time only it is advisable to hold it at standby temperature rather than to let it cool down to room temperature.

This is done by decreasing the burner heat slowly so that the temperatures drop about 30°F per hour, until only one burner on the lower hearth, at its lowest flame, remains on. By keeping a minimum draft on the furnace during this period it can be held at temperatures high enough to enable it to be brought back to operating temperature in a few hours, and with moderate gas consumption.

During standby periods the central shaft should be kept turning.

COOLING DOWN

If it becomes necessary to cool the furnace to room temperature, this should be done carefully and at not more than 30°F per hour temperature drop. Reduce the burner flames gradually. When the last burner is shut off reduce the draft to as close to zero as is possible without permitting fumes to escape into the room.

The central shaft may be stopped when the last burner is turned off.

SHUTTING DOWN THE FURNACE

1. Stop the feed to the furnace

2. Continue furnace operation until all material is discharged except the permanent bed.

3. Reduce the temperature as outlined under Cooling Down.

4. When the last burner is shut off, stop the central shaft.

5. Partially close the dampers as burner flame is reduced. This is very important for a slow cooling rate.

EMERGENCIES

POWER FAILURE

1. Stop the feed immediately.

2. Shut off the gas burners.

3. Open the doors to cool the furnace.

4. Before starting again, turn the central shaft by hand a full revolution.

STOPPAGE OF CENTRAL SHAFT

1. Stop the feed immediately.

2. Shut off the gas burners.

3. Determine cause of stoppage; examine all hearths and the drive.

4. If shear pin in drive has broken, replace after removing cause of stoppage.

5. Remove any excess feed under the feed opening.

6. Turn central shaft by hand a full revolution before starting motor.

The central shaft drive may meet with excessive resistance if the arms sag, permitting the teeth to penetrate into the permanent bed. Normally the rabble teeth clear the hearth brick by approximately one inch. This space between teeth and hearth fills up with charge material which remains in the furnace and is called the permanent bed.

After some time the arms may sag slightly, and the depth of this bed will be reduced. When it becomes less than 1/2 inch on any hearth the sagging arm should be raised or replaced.

The entire shaft and arm assembly can be raised a small amount to maintain the permanent bed, but care must be exercised to avoid raising the assembly so much that arms come in contact with the thermocouples.

EXCESSIVE TEMPERATURES

1. If due to too high a burner heat, reduce the flame.
2. If due to excess combustibles in the feed, cut off the feed until the temperature has returned to normal. Then start feeding again but at a lower rate.

GENERAL INSPECTION

1. Each shift, check all bearings and drives, lubricating as required (see lubrication chart).
2. Inspect all hearths at least once a shift for foreign matter lodged in hearths or rabble teeth. Open up plugged drop holes, repair broken or warped arms or teeth.
3. Inspect burner boxes each shift. Remove carbon clinker. Boxes must be kept clean to prevent slagging or damage to brick.
4. Inspect and clear burners each week.
5. Check drive belts each week tightening if loose.
6. Clean out gas outlet duct each week.

LUBRICATION CHART

NICHOLS HERRESHOFF FURNACE, SIZE 54" I.D. - 8 HEARTH

POINT	FITTING	LUBRICANT	CHECK	REFILL
Top Shaft Bearing	Zerck grease fitting	High temperature grease *	Every 4 Hours	Each Shift
Bottom shaft	Oil cup	S.A.E. #30	Each Shift	Change each Month
Speed Reducer	Oil level plug	S.A.E. #40	Each Shift	Each 3 Months
Bevel gear	Paint with brush	Cup grease and graphite	Each week	
Pinion gear	Paint with brush	Cup grease and graphite	Each Week	

* Grease having melting point of about 600°F.

J. W. 6 [illegible]
Jo — these should be added to the clean recovery procedure [illegible]

M-80

SOLVENT ROASTER PROCEDURE

Y/HG-0362

I. Background

In order to recover pure solvent from the solvent oxide which is formed in the trays of the Cascade, a roaster has been constructed at building 8110 in Y-12. In this roaster, the solvent oxide is heated with coke and is converted to metallic solvent at such a high temperature that the solvent leaves the furnace as vapor which is then condensed. The pure solvent is then returned to the Cascade.

It is doubted that enough solvent oxide will be formed in the Cascade to necessitate full-time operation of the roaster.

II. Materials

The following materials are used in the roaster operation:

A. Solvent oxide, called "ore", as removed from 9204-4. This material will also contain some pure solvent which will vaporize to be recovered, pieces of filter paper which will burn up, and water.

B. Coke. This coke will have to be crushed and sized to particales less than 3/4 inch. The coke serves to reduce the solvent oxide and to supply a portion of the heat to the roaster.

C. Sand is used in feed batches to prevent the wet ore's sticking to the hoist bucket and feed hopper. Sand after usage will collect in the calcine hopper and the dust collector hopper during operation, and may be returned to the sand hopper for re-use.

D. Natural gas is used as fuel.

E. Water is used in cooling the solvent as it falls from the condenser and as a scrubbing agent in the scrubber.

III. Equipment

A. Furnace - shell containing eight hearths; the two top hearths heated by heat from below, the four next hearths heated by gas burners, and two spare hearths at bottom. An arrangement of rabble arms, driven by drive motor D-882 at the bottom of furnace, moves the feed material from hearth to hearth.

B. Forced draft fan B-881 provides air to the burners for combustion of fuel gas.

C. Feed hopper and drive motor D-881 store the feed batches and continuously deliver feed to roaster furnace.

D. Bins - H-881 is a bin with chute for delivering ore to skip hoist bucket. H-882 is a bin with chute for delivering coke to skip hoist bucket. H-883 is a storage box with hand scoop for moving sand to skip hoist bucket.

E. Skip Hoist - 500 pound capacity bucket and track unit which moves feed batch from scales L-881, where batch is made up, to feed hopper, where batch is automatically dumped.

F. Cyclone Dust Collector - collector with removable dust hopper for catching solid particles leaving the roaster in the flue gas stream.

G. Condenser - four U-shaped air cooled condenser tubes in series, with outlets at the bottom of each U for passing solvent to collecting trough.

H. Trough H-885 - located under condenser section, passes condensed solvent continuously to solvent receiving tank F-881. Water continuously flows through trough to cool solvent.

I. Solvent receiver tank F-881 - stainless steel tank with sight glass for catching solvent from H-885 until solvent is removed and transported to 9204-4.

J. Induced air fan B-882 - maintains vacuum on roaster and draws roaster flue gases through dust collector H-886 and the condenser section.

K. Scrubber - column packed with Rachig rings through which flue gas is passed counter current to water spray, the water flowing at 5 gallons per minute. Solvent collected in scrubber automatically drains from bottom into a container.

L. Exhaust fan B-883 and stack - flue gas is diluted with air and blown through stack where entrained water from scrubber settles out and drains to sewer.

IV. Safety Hazards Use

A. The primary hazard is in the possible passage of solvent vapor from the equipment to the atmosphere. A number of safety features have been incorporated into the design of the roaster to cut down the hazard from this source. They are as follows:

1. The roaster is designed to designed to operate under vacuum, so that in case of leaks, air will leak into the system instead of vapor leaking out.

2. The gas supply will automatically be cut off in case of failure of the ventilating fans. This will stop the formation of solvent vapor soon after the fan stops.

3. All solvent normally exposed in the open will be covered with water. Solvent spills will take priority over all other work and must be cleaned up immediately.

UNCLASSIFIED

B. Secondary hazards are in (1) the danger of burns from the hot sections of the equipment, especially the roaster, the dust collector, and the first part of the condenser, and (2) the danger of strains in trying to move too large loads of the very heavy solvent and solvent oxide.

V. Operating Procedure

A. Solvent oxide, coke, and sand will be brought to the roaster by truck. They may be loaded directly into the proper storage bins. Solvent oxide will be transported in 55-gallon drums; pure solvent will be transported in regular solvent dollies.

B. Batches will be weighed out as follows:

Sand 37.6 pounds

Coke 15.5 pounds

Ore 346.9 pounds

The 400 pound batch will then be delivered to the feed hopper. The "A" shift will load the hopper with 5 feed batches, which should supply the roaster for a full day's operation.

C. Hourly checks will be made to make certain all equipment is operating, and that flows are normal.

Air flow will be checked by analysis of flue gas by means of Orsat apparatus as described in "Orsat Apparatus Procedure".

A very small amount of excess air (uncombined oxygen) is desired in the flue gas, and this will be controlled by adjusting the damper on forced air pump B-881.

Feed rate will be controlled in conjunction with the butterfly valve setting between B-882 and the scrubber to give an operating flue gas temperature of about 900° F. as it leaves the roaster. For too low a temperature the feed rate may be lowered or the butterfly valve partially closed.

The position of the butterfly valve also determines the amount of vacuum in the furnace, however, and should normally be left to hold a vacuum of about 0.15 inches of water.

The flow rate of water through trough H-885 should be sufficient to hold a temperature of 100° F. or lower at the point where the water leaves the trough. The water rate to the scrubber should be constant at about 5 gallons a minute as determined by the flow meter in the water line.

The rotation rate of the rabble arms should be the maximum speed which will give calcine completely free of solvent from the bottom of the roaster.

Gas rate will be controlled at each hearth to give a maximum temperature of about 1300° F. on hearth 6 with a temperature gradient up the furnace with a temperature of about 900° F. at the flue gas exit from the furnace.

VI. Start-up Procedure

During start-up, equipment will be turned on in the following order:

1. Water flow to trough H-885.
2. Water flow to scrubber.
3. Induced air fan B-882.
4. Exhaust fan B-883.
5. Furnace drive motor D-882.
6. Forced draft fan B-881.
7. The burners will be lit.
8. The gas rate will be adjusted to give a temperature rise of about 100°F. per hour in furnace. When the temperature of the exit flue gas reaches 900° F., start the feed hopper motor D-881.

9. Control temperature at some point above 750° F.

VII. General Shut-Down Procedure

A. During routine shut-down, the following steps will be taken:

1. Shut off feed motor D-881.

2. Shut off fuel gas completely, closing solenoid valve manually.

B. When roaster temperature drops near outside temperature, proceed as follows:

1. Shut off forced draft fan B-881.

2. Shut off furnace drive motor D-882.

3. Shut off exhaust fan B-883.

4. Shut off water to scrubber.

5. Shut off water to trough H-885.

6. Shut off induced draft fan B-882.

VIII. Emergency Shut-Down Procedure

In case of emergency, such as the breaking of a line carrying solvent vapor or any other condition which would admit solvent vapor to the atmosphere, the feed motor D-881 should be stopped, the fuel gas and forced draft fan B-881 should be stopped, and the area evacuated, leaving the rest of the system operating.

SOLVENT ROASTER OPERATING INSTRUCTIONS

I. Start-up Instructions

A. Initial steps

1. Seal the solvent line between the solvent received tank F-881 and the condenser trough H-885 by pouring enough clean solvent into the trough to bring the solvent level in the solvent line just to the bottom of the trough.
2. Fill the condenser trough H-885 with water and leave the valve at that setting which will give about 3 gallons a minute water flow through the trough. This valve setting will be determined during the initial testing of the roaster. Check to make sure that this water overflows at the south end of the trough to the sewer line and does not flow through the solvent drain line.
3. Seal the lower drain line on the bottom of the gas scrubber by pouring a small amount of clean solvent into the line.
4. Open the valve in the water line to the scrubber and by observing the flow indicator located near the inlet to the scrubber, adjust the water rate to the scrubber to approximately 5 gallons per minute. Check to make sure that this water flows through the upper drain line at the bottom of the scrubber to the sewer.
5. Open the butterfly valve on the gas line at the top of the scrubber to the 3/4 open position.
6. Start the induced draft fan B-882 (which draws air from the condenser.

7. Open an inspection port near the bottom of the furnace and allow air to flow through the system.

8. Start the exhaust fan B-883 at the stack.

9. Start the furnace drive motor D-882 and adjust the motor speed so that the rabble arms rotate at about 1/2 speed. The exact motor speed will be determined during initial roaster operation, and that speed will be used during all operations.

10. Check the following items:

    a. Valve on line between cyclone dust collector H-886 and dust hopper should be open.

    b. Flange on line above dust collector should be sealed.

    c. The two sampling connections located near the top of the scrubber, one on the gas line into the scrubber and the second on the gas line leaving the scrubber, should be plugged.

    d. The valve on the drain line from the solvent receiving tank F-881 should be closed.

11. Make certain regulating valve in gas line nearest the furnace is closed.

12. Activate the solenoid valve in the gas line by starting the forced draft fan B-881 at the bottom of the furnace.

13. Prepare a lighting torch by bending two loops in a four foot piece of #8 wire; one loop will be a handle, the other will be wrapped around a small quantity of oily waste.

14. Open inspection ports in the furnace at hearths 3, 4, 5, and 6. Light the torch and insert it through the inspection port to the burner on hearth 3.

15. Open the regulating valve in the gas line and the burner valve at hearth 3.

16. Start the burner on hearth 3, then move down and start hearth 4, then hearth 5, then hearth 6.

17. Close all inspection ports tightly.

18. Start the L & N recording potentiometers to record the furnace temperature rise on the strip chart. Adjust the gas rate to the hearths (with the regulating valves at the hearths) to give a temperature rise of about 100° F. per hour on the hearths.

19. Adjust the butterfly valve in the gas line at the top of the scrubber to give a vacuum of about 0.15 inches of water.

20. Open the valve in the water line entering the solvent receiver tank F-881 and allow the water level to rise about an inch above the bottom of the sight glass. Close the valve.

21. While the furnace is warming up, batches of feed may be prepared and dumped into the feed hopper.

B. Preparation of Feed Batch

1. By using the "reverse" button, lower the skip bucket on the track until its full weight is supported by the platform of the scale L-881. Determine the tare weight of the skip bucket.

2. Using the hand scoop, weigh into the skip bicket 37.6 pounds of sand from hopper H-883; spread the sand over the bottom of the bucket. The amount of sand required may vary with the dampness of the ore. Enough sand should be used to prevent the sticking of ore to the skip bucket and feed hopper.

3. By forcing the lever arm down, raise the door of the ore (solvent oxide) hopper H-881 and allow 175 pounds of solids to pour into the bucket.

4. Close the ore hopper door, open the coke hopper H-882 door, and allow 15.5 pounds of coke to pour into the bucket. (The coke should have been previously sized to less than 3/4 inch lumps.)
5. Close the coke hopper door, reopen the ore hopper door, and drain 172 more pounds of ore into the bucket. Close the ore hopper door.
6. By pressing the "start" button on the skip hoist, the skip bucket will be carried to the top of the feed hopper and will dump automatically.
7. By pressing the "reverse" button, return the skip bucket to the scale platform.
8. Dump at least two batches of feed into the hopper before starting feed to the furnace.
9. When the temperature of the gas leaving the furnace reaches 900° F., start the drive motor D-881 on the feed hopper. Start the feed in as slowly as possible and gradually increase the feed rate to that rate selected during initial operation of the roaster.
10. Watch the temperature of the gas leaving the furnace (flue gas) carefully; it should not be allowed to fall below 750° F. In case it starts falling, cut the solid feed rate back as much as necessary to keep the temperature above 750° F. When the coke in the feed begins to burn, the temperature of the flue gas will start increasing; when this happens, lower the gas rate to the hearths. The temperature of the flue gas should be controlled at about 900° F. The maximum temperature in the furnace should be on hearth 6 and should be about 1300° F.

11. Uniform operating conditions will not prevail until:

a. Solvent flows from the condenser.

b. Uniform temperature conditions prevail.

c. Feed rate is constant.

d. Fuel gas flow rate is constant (at about 97.5 cubic feed per hour).

II. Instructions for Normal Operating Conditions

A. Preparation of feed batches

1. The day shift will make up 5 batches and dump them into the feed hopper. the 5 batches should last 24 hours.

2. Batches will be made up as follows:

a. By using the "reverse" button, lower the skip bucket on the track until its full weight is supported by the platform of the scales L-881. Determine the tare weight of the skip bucket.

b. Using the hand scoop, weigh into the skip bucket 37.6 pounds of sand from hopper H-883. Spread the sand over the bottom of the bucket. The amount of sand may vary with the dampness of the ore; enough sand should be used to prevent the sticking of ore to the skip bucket and feed hopper.

c. Raise the door of the ore hopper H-881 and allow 175 pounds of solids to pour into the bucket.

d. Close the ore hopper door, open the coke hopper H-882 door, and allow 15.5 pounds of coke to empty into the bucket.

Note: This coke must be in 3/4" lumps or smaller. Before storing in the hopper, the coke should be crushed and sized.

e. Close the coke hopper door and add 172 more pounds of ore from hopper H-881 to the bucket.

UNCLASSIFIED

f. By pressing the "start" button on the skip hoist, the skip bucket will be carried to the top of the feed hopper and will be dumped automatically.

B. Periodic Checks

1. About once a day, on "B" shift, close the calcine gate at the bottom of the furnace, loosen the clamp on the asbestos hood above the waste trap H-884; remove the trap and empty the solids into the sand bin H-883. Replace the trap, tighten the asbestos cover, and open the calcine gate. Save about 100 cc of the calcine material for spec anaylsis.

2. About once a day, on "B" shift, close the valve between the cyclone dust collector H-886 and the dust hopper, open the flange above the dust hopper, and dump the solids in the hopper into sand hopper H-883. Replace the dust hopper, tighten the flange connection, and reopen the valve above the dust hopper.

3. About once a shift, analyze a sample of the flue gas in the gas line leaving the top of the scrubber as described in "Orsat Apparatus Instructions". If the carbon monoxide content is found to be above 0.1% in the flue gas, increase the amount of air passing through the furnace by slightly opening the damper on the forced draft fan B-881. If the oxygen content is found to be above 0.1% in the flue gas, decrease the amount of air passing through the furnace by slightly closing the damper on the forced draft fan B-881.

4. Every two hours check and record the following:

a. Temperature of discharge water from condenser trough H-885. Adjust water flow rate so that this temperature is 100° F. maximum.

b. Flow meter reading on water to scrubber (approximately 5 gallons per minute).

c. Induced draft fan B-882 (on - off).

d. Position of butterfly valve between condenser and scrubber.

e. Forced draft fan B-881 (on - off).

f. Damper position on forced draft fan B-881.

g. Exhaust fan B-883 (on - off).

h. Damper position at exhaust fan B-883.

i. Pressure on furnace - should be a vacuum of 0.15 inches of water. Adjust by butterfly valve setting between condenser and scrubber.

j. Hearth temperature (degree F.) for four hearths.

k. Feeder D-881 speed (RPM).

l. Receiver tank F-881 sight glass reading (inches).

m. Production rate (pounds solvent per hour as determined by tank F-881 calibration chart).

n. Fuel gas rate (cubic feet per hour).

5. Every day, during "C" shift, drain solvent from F-881 into a tared portable dolly for removal to Beta-4. Obtain a gross weight of the filled dolly and determine the net weight of solvent removed.

C. General Records

Record, as necessary:

1. Weight of sand, weight of coke, and weight of ore in each batch to the feed hopper.

2. Total weight of batch and batch number.

3. Time batch was dumped.

4. Weight of product solvent (from section B, item 5, above).

5. Weight of sand, weight of coke, and weight of ore delivered to the roaster, with time of delivery.

6. Weight of solvent from the scrubber.

7. Weight of solvent sent to Beta-4.

III. Scheduled Shut-Down For More Than Two Days

A. In shutting down, a negative pressuremust be maintained on the furnace until it has cooled to air temperature to prevent harmful solvent vapors escaping to the atmosphere.

1. Shut off feed motor D-881.

2. When the exit flue gas temperature drops to 700° F, shut off the fuel gas completely.

3. Manually close the solenoid valve in the fuel gas line.

B. After the furnace hearths have cooled to within 50° of the outside temperature, proceed as follows:

1. Shut off forced draft fan B-881.

2. Shut off furnace drive motor D-882.

3. Shut off exhaust fan B-883.

4. Shut off water flow to scrubber.

5. Shut off water flow to condenser trough H-885.

6. Shut off induced draft fan B-882.

7. Remove and empty dust hopper. Replace hopper.

8. Clean up area.

IV. Instructions For Short Shut-Down

1. Shut off feed motor D-881.

2. When solvent completely stops falling into trough H-885 adjust the fuel gas to maintain a flue gas temperature of about 750° F.

UNCLASSIFIED

3. Turn water flow off of trough H-885 and scrubber.

4. Turn off drive motor D-882.

5. Leave all three fans - B-881, B-882, and B-883 on.

V. Start-Up After Short Shut-Down

1. Turn on drive motor D-882.

2. Turn water flow on trough H-885 at normal flow rate.

3. Turn water flow on scrubber at about 5 gallons per minute.

4. Raise fuel gas rate to give flue gas gas temperature of 900° F. where the gas leaves the furnace.

5. Start feed motor D-881.

6. When the coke begins to burn, as seen by increasing temperature in the furnace exit flue gas, cut down on the flow of fuel gas to maintain an operating temperature of 900° F. in the furnace exit gas.

VI. Safety Precautions

A. The major hazard at the solvent roaster is in the passage of poisonous solvent vapor to the atmosphere. To hold this hazard to a minimum, the following steps have been taken:

1. The roaster is designed to operate under a slight vacuum so that gases would leak in rather than out.

2. The condenser trough, the solvent receiving tank, and the solvent container at the scrubber, should always be partially filled with water.

3. A solvent vapor meter, which indicates solvent vapor concentration in the air, has been obtained and should be used frequently as a check. The meter may be used in locating the source of solvent vapor if traces are found. Instructions for the use of this instrument will be on the instrument.

4. Solvent spills are to be given first priority and should always be cleaned immediately.
5. During operation, the furnace, the flue gas lines, and the condenser will be very hot. Extreme care should be taken to prevent burns.
6. Solvent and solvent oxide are very heavy materials and care should be taken to avoid strains.

VII. Emergency Procedure

In the event of a failure or leakage in any vapor line, or any other condition which would allow solvent vapor to excape to the atmosphere, the following procedure will be followed:

1. Shut off feeder motor D-881.
2. Shut off gas to furnace.
3. Shut off forced draft fan B-881.
4. All other equipment should be left operating.
5. Evacuate the area.

ORSAT APPARATUS PROCEDURE

I. Background

During operation of the solvent roaster, it becomes necessary to periodically analyze the flue gases leaving the roaster to determine whether or not the proper amount of excess air is being admitted to the roaster. For performing this analysis, an Orsat apparatus is located at the roaster.

II. Equipment

The equipment consists of a graduated tube with a leveling bottle containing mercury and the following three absorption pipettes:

1. Pipette for carbondioxide (CO_2) absorption, which contains concentrated potassium hydroxide.
2. Pipette for oxygen (O_2) absorption, which contains alkaline pyrogallol.
3. Pipette for carbon monoxide (CO) absorption, which contains cuprous chloride.

III. Procedure

A. By lowering the leveling bottle, the mercury level in the graduate falls and gas can be drawn into the graduate from the sampling point. The sample is then discharged to the atmosphere, and the procedure repeated twice again, flushing the graduate out with the flue gas.

B. After the sample is obtained in the tube (with a volume of exactly 100 ml.), it is passed in and out of the first pipette (for CO_2 absorption) until the volume is constant ~~three times~~. The volume of the remaining gas is read and the per cent CO_2 determined. This step is then repeated on the second pipette where the per cent O_2 is determined, and the third, where the per cent CO is determined. The volume of gas remaining in the graduate gives the per cent nitrogen (N_2) in the sample.

III. Safety Hazards

All three solutions used in the apparatus are strong reagents and should be handled with care.

ORSAT APPARATUS OPERATING INSTRUCTIONS

I. Preparation of Sample

A. Check all lines to make certain they are tight.

B. Check each of the three absorption pipettes to make sure the level of liquid in each pipette is exactly even with the calibration mark on the pipette inlet line. If the level is off, open the stopcock on the pipette inlet line and adjust the level by very slowly raising or lowering the leveling bottle.

C. Have the surface of the mercury in the measuring graduate just covered with clean water.

D. Draw sample into measuring graduate as follows:

1. Close valve between measuring graduate and sampling line.
2. Open stopcock in end of header passing over the absorption pipette.
3. By gently raising the leveling bottle, bring the top of the water over the mercury just to the zero calibration mark.
4. Close stopcock in end of header.
5. Open valve between graduate and sampling point..
6. Slowly lower leveling bottle until the water level exactly reaches 100 ml. calibration mark.
7. Repeat steps 1 through 6.
8. Repeat step 7.
9. Close valve between graduate and sampling point.

II. Analysis of Sample

A. Open stopcock to first absorption pipette (which should contain strong KOH).

B. Raise leveling bottle until water level comes just to zero calibration mark. Be careful not to allow water or mercury to get into header or absorption pipette.

C. Lower leveling bottle until liquid level in absorption pipette just reaches calibration mark on pipette inlet line. Be careful not to allow any pipette solution to enter header or measuring graduate. In case any does carefully take equipment apart, wash all contacted pieces thoroughly in water, put all apparatus back together, and start over.

D. Repeat steps B and C.

E. Repeat step D.

F. Close stopcock to absorption pipette.

G. Read level of water in graduate to nearest 0.1 milliliter. Subtract this figure from 100. The result is the percentage of CO_2 in the sample. (Example - level reading equals 82.0 ml. The CO_2 percentage then equal 100 minus 82.0 = 18.0%.)

H. Open the stopcock of the second absorption pipette (which should contain alkaline pyrogallol).

I. Repeat steps B and C above until volume becomes constant ~~three times.~~

J. Close the stopcock to the absorption pipette.

K. Read the level of water in graduate to the nearest 0.1 milliliter. Subtract the reading from the water level reading obtained in step G. The result is the percentage of O_2 in the sample. (Example - level reading equals 81.8 ml. The O_2 percentage then equals 82.0 minus 81.8 = 0.2%.)

L. Open the stopcock to the third absorption pipette (which should contain Cu_2Cl_2).

M. Repeat steps B and C above three times.

N. Close the stopcock to the absorption pipette.

O. Read the level of water in the graduate to the nearest 0.1 milliliter. Subtract from the reading obtained in step K. The result is the percentage of CO in the sample.

(Example - level reading equals 81.7 ml. % CO equals 81.8 minus 81.7 equals 0.1%.)

P. The volume reading found in step N is equal to the percentage of N_2 in the sample (in the example, this would be 81.7%).

III. Safety Hazards

Hazards are presented by the chemicals used in the absorption pipettes. The liquids in the CO_2 and O_2 pipettes contain concentrated caustics, and the liquid in the CO pipette contains concentrated acid. In case these solutions contact the skin, immediately flocd the contacted area with water.

IV. Refilling Pipettes

After continued use of the Orsat Apparatus it will be necessary to throw away the pipette solutions and refill the pipettes. (The alkaline pyrogallol in the O_2 pipette will turn dark drown very rapidly. This coloring does not mean that the pipette should be refilled.)

1. Very gently disconnect the pipette.
2. Pour out old solution.
3. Wash out pipette thoroughly with water.
4. Turn pipette upside down and allow to dry.
5. Refill pipette with proper solution.
6. Carefully replace pipette.

Y/HG-0169
(M-836)

Sludge burner analyses
1957-1959

Y/HG-0/Subnumber

14 g/d
(5.7 lbs/d H2O)
9.80 g/d
5.82 g/d

169/1 Sludge burner stack loss of solvent. Letter report: Morehead to Whitson, June 18, 1957. Includes 6 air analysis reports for samples taken from ~~March~~ April 18 ~~27~~ to June 12, 1957. 7pp.

169/2 Analysis of sludge burner water. Letter: Gwinn to Morehead, July 23, 1957. 1p.

169/3 Sludge burner [calculations for] air flow for January 9-10, 1958.] losses due to Data sheet. 1p.

169/4 Air analysis [for samples taken on July 15, 1958.] Data sheet: Brown to Morehead, ca. July 16, 1958. 1p.

169/5 [Creek water analyses.] Four analytical reports on Lab. Req. 817321 for Morehead, September 22, 1959. 5pp.

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: W. K. Whitson
Bldg. 9201-4

Plant: Y-12

Date: June 18, 1957

Copies To: D. A. Jennings
File ✓

Subject: Sludge Burner Stack
loss of Solvent

Y/HG-0169/1

At the request of D. A. Jennings and Leo J. LaFrance, samples were taken from the stack of the Sludge Burner to determine solvent loss and health hazards. Below are the results of these samples, before and after revision of the exhaust and condenser.

Date of Sample	Avg. stack volume	grams per hour	average grams per hour		gram loss per day
4-18-57	1300 CFM	.25		6	
4-18-57	1300 CFM	.65	.42	15.6	10.08
4-18-57	1300 CFM	.37		8.9	
5-6-57	1300 CFM	.17		4.1	
5-6-57	1300 CFM	.43		10.3	
5-6-57	1300 CFM	1.30	.66	31.2	15.84
5-6-57	1300 CFM	1.05		25.2	
5-6-57	1300 CFM	.09		2.2	
5-6-57	1300 CFM	.93		22.3	

"Sludge feed ceased 30 min prior to completion of sampling time"

one condenser not operating

20 min sample time

1 cfm

1300 cfm 4" diam.

After Revision

6-12-57	1300 CFM	.30		7.2	
6-12-57	1300 CFM	.44		10.6	
6-12-57	1300 CFM	.96	.70	23	16.8
6-12-57	1300 CFM	.81		19.4	
6-12-57	1300 CFM	1.13		27.1	
6-12-57	1300 CFM	.57		13.7	
6-17-57				22.3	20.16
				25.7	
				17.3	
				17.5	
				21.4	
				17.3	

APPROVED FOR PUBLIC RELEASE

M. L. Bond 5/4/94

Technical Information Office Date

James F. Morehead

James F. Morehead
Industrial Hygiene Section
Medical Department

6-17-57	.93
6-17	1.07
6-17	.72
6-17	.73
6-17	.89
6-17	.72

.84

JFM:emm

7-12 68 stack smoking
44 hi feed rate - normal feed rate - no smoke

9 min.

WCX-163 (8-55) This form for Inter-Company Correspondence only

AIR ANALYSIS

To L. J. LaFrance, Y12RC
Attn. J. D. McLendon
File

The following air samples were taken to determine the concentrations of solvent being exhausted from the solvent salvage facility exhaust stack at Building 8110.

Sample No.	Date of Sample	Location of Sample	Time of Sample			Rate cfm	Total Vol. Ft^3	Contaminant µg/Hg.	Results
			Start	Finish	Total Min.				
1	4-18-57	In center line of stack at the outlet	13:42	14:02	20	1	20	65	.26 g/hr
2	"	See Sample No. 1	14:20	14:40	20	1	20	166	.65 g/hr
3	"	See Sample No. 1	14:44	15:04	20	1	20	94	.37 g/hr

COMMENTS:

1. Diameter of stack (14").
2. The addition of sludge to the furnace ceased 20 - 30 minutes prior to completion of the sampling time.
3. Average stack volume = 1300 cfm.

GBA/eb

Inspector C. M.

Analyzed by

5-6-57

Remarks
avg. 42g/hr
10.08g/day
West

#1 65 μg Hg/20 cu ft

3.25 μg Hg/cu ft

.254 g Hg/hr

6.08 g Hg/day

Stack volume = 1300 cfm

78,000 cf/hr

1,872,000 cf/day

#2 166 μg Hg/20 cu ft

8.3 μg Hg/cu ft

.648 g Hg/hr

15.5 g Hg/day

#3 94 μg Hg/20 cu ft

4.7 μg Hg/cu ft

.367 g Hg/hr

8.8 g Hg/day

AIR ANALYSIS

5-10-

To L. J. LaFrance, Y12RC

Att. J. D. McLendon

File

The following air samples were taken to determine the levels of mercury in the effluent stack being exhausted from the solvent salvage facility.

Sample No.	Date of Sample	Location of Sample	Time of Sample Start	Finish	Total Min.	Rate cfm	Total Vol. Ft.³	Contaminant µg of Hg.	Results g/hr	
1	5-6-57	Center line of stack at the outlet	12:30	12:50	20	1	20	43	.17	
2	"	See Sample No. 1	13:00	13:20	20	1	20	109	.43	
3	"	See Sample No. 1	13:23	13:43	20	1	20	333	1.30	avg .66
4	"	See Sample No. 1	13:48	14:08	20	1	20	268	1.05	
5	"	See Sample No. 1	14:11	14:31	20	1	20	22	.09	
6	"	See Sample No. 1	14:35	14:55	20	1	20	239	.93	
7	"	BLANK	-----	-----	---	--	---	14	—	
8	"	See Sample No. 7	-----	-----	---	--	---	< 10	—	

COMMENTS:

1. ~~Diameter of stack 14".~~
2. One condenser not in operation.
3. Burning carbon while sampling.

GBA/eb

Inspector C. M. West

Analyzed by Special Testing

-57

300 cfm

μg

Remarks
2.
g/hr
15.84 g/day

C. M. West

r Lab

	total µg	µg/ft	g/hr
#1	43	2.15	.17 (1230-50
#2	109	5.45	.43 (1300-20
#3	333	16.65	1.30 1323-43
#4	268	13.40	1.05 1348-06
#5	22	1.10	.0914 1431
#6	239	11.95	.93 14-35-55
#7	14	.7 Blank	.055
#8	<10	— Blank —	

taken
5/6/57 12:30 ↔ 255

1300 cu ft/m

78000 cu ft/hr

AIR ANALYSIS

To J. F. Morehead Y-12 RC
Attn. J. D. McLendon
File

The Following Air samples were Taken to determine levels of Mercury In The Effluent stack From The Facility.

Sample No.	Date of Sample	Location of Sample	Time of Sample Start	Finish	Total Min.	Rate c.f.m.	Total Vol. ft³	Contaminant Mg-of-Hg	Results g/hr
1	6-12-57	Centerline of stack	12:00	12:20	20	1	20	77.5	.30
2	"	See Sample #1	12:44	13:04	20	1	20	112.5	.44
3	"	" " #1	13:39	13:50	20	1	20	247.5	.96
4	"	" " #1	13:52	14:12	20	1	20	207.5	.81
5	"	" " #1	14:13	14:33	20	1	20	290.0	1.13
6	"	" " #1	14:34	14:54	20	1	20	145.0	.57
7	"	Blank	—	—	—	—	—	0	
8	"	See Sample # 7	—	—	—	—	—	0	

Inspector _____

Analyzed by _____

To Determine The
e solvent salvage

Remarks
about 3 hr duration
avg. 70 g/hr
16.8 g/day

Comments:

1. Diameter of stack 14"
2. Average stack volume = 13^{00} c.f.m.
3.

AIR ANALYSIS

To J. F. Morehead, Y12RC

Att. J. D. McLendon

File

The following air samples were taken to determine the levels of mercury in the effluent stack at the solvent sludge facility.

Sample No.	Date of Sample	Location of Sample	Time of Sample			Rate c.f.m.	Total Vol. Ft.³	Contaminant µg. of Hg.	g/hr Results	
			Start	Finish	Total Min.					
1	6/17/57	Center line of stack	12:25	12:45	20	1	20	237.5	.93	11.9 g
2	"	See Sample No. 1	12:53	13:13	20	1	20	275.0	1.07	13.7 g
3	"	See Sample No. 1	13:16	13:36	20	1	20	185.0	.72	9.2
4	"	See Sample No. 1	13:40	14:00	20	1	20	187.5	.73	9.4
5	"	See Sample No. 1	14:01	14:21	20	1	20	227.5	.89	11.4
6	"	See Sample No. 1	14:25	14:45	20	1	20	185.0	.72	9.2
7	"	BLANK	-----	-----	--	--	--	0		
8	"	BLANK	-----	-----	--	--	--	167.5		

COMMENTS:

1. Burning graphite in furnace while sampling.
2. Feeding furnace at approximately 30 min. intervals.
3. Furnace vacuum range: 0.46 - 0.54 inches of water.

Special

1(*)	6/12	Stack smoking	9:26		9	1	9	330		36.7 g
2	6/12	Stack not smoking		9:55	9	1	9	210		23.3

GBA/eb

(*) 1. Increased the feed
2. Normal [illegible] feed rate

Inspector C. M. West

Analyzed by [redacted] Special T

6-21-57

Remarks
/ft³ — .93
/ft³ — 1.07
— .72 avg. .84 g/hr
— .73 Loss
— .89
— .72
20.16 g/Day
8/ft³ - 2.86 g/hr 68.64 g/D
1.82 g/hr 43.70 g/D
Omo

esting Lab

To L. J. LaFrance, Y12RC ✓
Attn. J. D. McLendon
File

AIR ANALYSIS

Burning of Solvent contaminated combustible material at Y-12 Burning Ground.

Sample No.	Date of Sample	Location of Sample	Time of Sample Start	Finish	Total Min.	Rate cfm	Total Vol. cfm	Contaminant Hg.	Results Total µg.	R
1	3-27-57	South side of pit in smoke	10:26	10:50	24	1	24		40	Sample N
2	3-27-57	BLANK	----	----	--	--	--		< 20	from fire wind char smoke fr

Special test for Solvent at Burn Ground

On March 27, 1957, the Health Physics Department was asked to assist in the test of burning solvent contaminated combustable scrap. A series of readings were taken with the mercury vapor detector to determine the amount of mercury vapor air-borne by the fire. The results were in the order of the MAC. An impinger, with a weak solution of acid, was also used in the test and sent to the lab to be analyzed for solvent. The impinger sample was taken in the smoke from the burning of the scrap.

JSB/eb

Inspector C. M. West

Analyzed by Jim

4-3-57

Remarks
No. 1 was taken in smoke
re; smoke very heavy;
anged the direction of the
requently.

m Morehea

	816460
BATCH NUMBER	REQUISITION NUMBER

REPORT TO: TT Sanchez

BUILDING NO. 9704-2 PHONE: 7216

DESCRIPTION OF MATERIAL:

U Impingers air Samples

ASSAY REQUESTED AT ☐ DT ☐	AT CODE NO.
ANALYSIS REQUESTED	REPORTED ANSWERS
GRAM U /GRAM	
No. 1	330 µgm
No. 2	210 µgm

SIGNED:

BY: DATE

Sludge Burner

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: John Reece
Bldg. 9201-4

Plant: Y-12

Date: January 17, 1958

Subject: Building 8110 Stack Loss

Copies To: Tony Caputo
File

Air Samples were taken at the Sludge Burner exhaust stack to determine the average solvent loss per day.

The following results were made using a traverse figure of 1225 cubic feet per minute velocity.

Date	Time	Sample	ug Hg/ft.	g Hg/day	Average
1-9-58	1:30-2:40 P.M.	1	4.21	7.43	
1-9-58	2:45-3:45 P.M.	2	2.35	4.15	9.80 g Hg/day
1-10-58	10:40 A.M. - 3:20PM	3	10.10	17.82	

James F. Morehead
Industrial Hygiene Section
Medical Department

JFM:emm

7-15-58

1, 2, 3, 4, 5, 6 probe 5" inside stack

4.5 " 5.2 " 7.7 "

5.82 g/d avg.

1200 cfm

UCN-7721B
(3 1-86)

OAK RIDGE Y-12 PLANT INFORMATION CONTROL FORM

DOCUMENT DESCRIPTION (Completed By Requesting Division)

Document No.	Author's Telephone No.	Acct. No.	Date of Request
ms/ChR2-0207	6-0263	2366000 3	10/19/95

Unclassified Title: SOLVENT AIR-SLUDGE BURNER (JANUARY 17, 1958) (209C-1H-1)

Author(s): Requestor: Steve Wiley

TYPE: ☐ Formal Report ☐ Informal Report ☐ Progress/Status Report ☐ Co-Op Report ☐ Thesis/Term Paper

☐ Oral Presentation (identify meeting, sponsor, location, date): _____

☐ Journal Article (identify Journal): _____

☒ Other (Specify): To Be Released to ChemRisk, Phase II

Document will be published in proceedings ☑ No ☐ Yes

Document will be distributed at meeting ☑ No ☐ Yes

Document has patent or invention significance ☑ No ☐ Yes (Identify) _____

Document has been previously released ☑ No ☐ Yes (Reference) _____

DIVISION REVIEW AND APPROVAL (Completed By Requesting Division)

TECHNICAL CLASSIFICATION REVIEW (Divisional Classification Representative)

Title(s): Unclassified Abstract: —

DOCUMENT: Level Unclassified Category —

N.F. Quigh — 20 Oct 1995
Signature — Date

Y-12 Plant Classification Office

DOCUMENT REQUEST APPROVED (Division or Department)

John D. Wiley — 10/19/95
Signature — Date

Signature — Date

THE REMAINDER OF THIS FORM TO BE COMPLETED BY THE TECHNICAL INFORMATION OFFICE

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☐ External Distribution
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M-3679 Category _____
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Distribution:	UCN-7721B	DOE F-1332.15	Docum
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	S.W. Wiley		
	R.M. Keyser		

Distribution Remarks: Unlimited (ChemRisk)

APPROVAL AND RELEASE

Date Received | Date Initiated 10/20/95

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Weapons Data — Sigma —

R.D. Fraser — 10/20/95
Y-12 Classification Office — Date

☐ _____ Editor — Date

☑ Wanda Vass — Patent Office — Date

☐ _____ — Date

☐ _____ — Date

APPROVED FOR: ☐ Declassification ☐ Release subject to use of the following admonitory markings and conditions:

☐ Disclaimer ☐ Copyright ☐ Patent Caution ☐ Other

_____ — 10/23/95
Technical Information Office — Date

Conditions/Remarks:

DIVISION	DEPARTMENT	SECTION	BLDG.-ROOM
Technical	Radiation Safety	Industrial Hygiene	9711-1

DESCRIPTION OF RECORDS	DATES FROM	DATES THROUGH	CODE NO.	RETENTION PERIOD
Solvent Urine and Air Results	1954	1960	2090-IH-4	Indef.
Creek Results	1- 1959	12-59	2090-IH-4	Indef.
Enclosed in box is a list of all folders included in the box				

DOE Hold 1324.7

BOX NO. 1 OF 6 | TYPE MATERIAL: [X] RECORD [ ] NON-RECORD [ ] CLASSIFIED [x] UNCLASS.

TO BE COMPLETED BY PLANT RECORDS DEPARTMENT

LOCATION BLDG.	ROOM	ROW OR SECTION	TIER	SHELF OR DRAWER	BOX
		9	7		6

RECORDS VERIFIED BY: O C. Hartman

DATE: 1-15-63

UCN-578 (12 5-59)

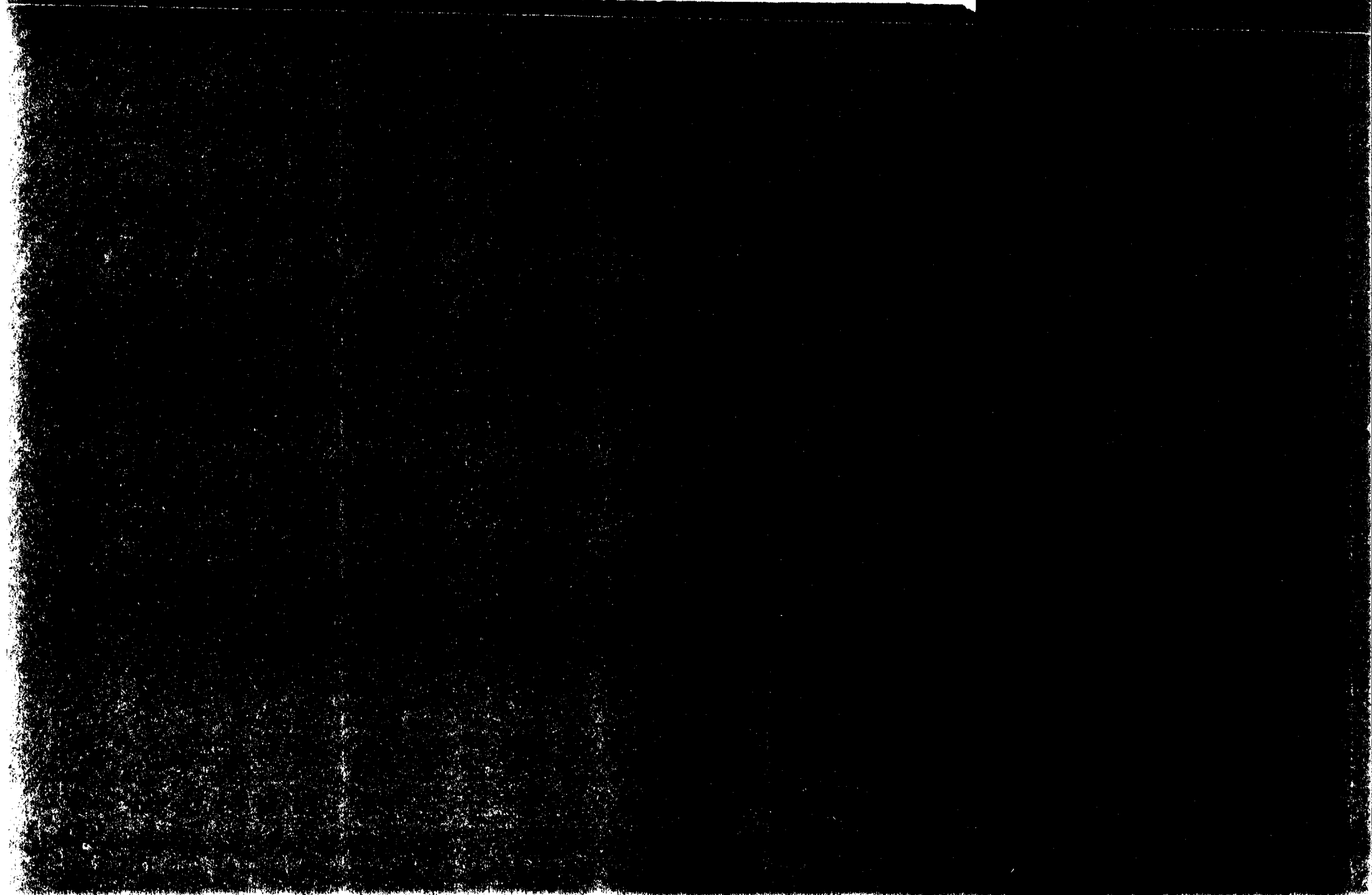
RETIRED RECORDS CONTROL

APPROVED FOR PUBLIC RELEASE

10/23/95

Technical Information Office Date

SOLVENT AIR - SLUDGE BURNER



AIR ANALYSIS

To J. F. Morehead

Att.

The Following Stack Samples were Taken at Building 1200 CEM for To determine the Amount of Hg. giving off From the recovery process.

Sample No.	Date of Sample	Location of Sample	Time of Sample Start	Finish	Total Min.	Rate m^3	Total Vol.	Con-Total taminant kg / µg	Results ft^3	
1 x	7-15-58	5" inside Stack (Probe)	1319	1348	29	.025	.725 m^3	34.41 µg	1.34	
2 x							25.6 ft^3	33.11	1.29	2.63 µg x
3 xx		5" inside Stack "	1351	1423	32	.025	.800 m^3	59.65	2.09	
4 xx							28.3 ft^3	26.23	0.93	3.02 µg x
5 xxx		" " "	1425	1445	20	.025	.5 m^3	53.38	3.02	
6 xxx							17.7 ft^3	25.30	1.43	4.45 µg x
7		Blank	—	—	—	—	—	.93		

Note:
The samples 1-6 were run in series

Inspector L. Brown

Analyzed by

8-10

Y/HG-0169/4

e

was used as exhaust

m stock

Remarks
X 1.728 = 4.54 gms/24hrs.
1.728 = 5.22 gms/24hrs.
X 1.728 = 7.69 gms/24hrs

avg 5.82g/day

Solvent air - sludge burner - Building 8110
1957, 1959

Y/HG-0/Subnumber

172/1 Recommendations for sludge burner from health standpoint. Letter: Morehead to Jennings, August 28, 1957. 1p.

172/2 Sludge burner readings. Twenty-four data sheets, January-December 1959.

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: D. A. Jennings
Bldg. 9201-4

Plant: Y-12

Date: August 28, 1957

Copies To: Dick Brothers
File ✓

Subject: Recommendations for Sludge Burner from Health Standpoint

Y/HG-0172/1

1. All cracks should be sealed in the concrete floors around the area.

2. The tile floor in the office, toilet and eating area should be removed or cleaned a minimum of once per shift with "clorox" or NaClO and water. Special emphasis should be placed for clean-up on Saturday and Sunday. This area will be more hazardous with the doors closed during cool weather.

3. Install sprinkler pipes around the perimeter of the concrete slabs to maintain a constant wet surface and reduce the mercury vapor-pressure.

4. Engineering should be asked to design some type of alarm system to prevent blow-outs from the furnace.

5. Personnel should refrain from placing contaminated gloves and other equipment in the lockers or other facilities should be provided for storage of coffee, sugar, etc.

6. Fans should be made available to dispel the contaminated air in the vicinity of the desk. Natural ventilation is not adequate at all times.

Mr. James F. Morehead
Industrial Hygiene Section
Medical Department

JFM:FW:emm

Y/HG-0172
example

Date	Inside Locker "A"	Inside Locker "B"	Inside Locker "C"	Inside Locker "D"	Over Scales	BL between scales and lockers	BL 10 ft. south of lockers	BL 10 ft. west of lockers	BL at storage bin	BL over the desk	BL at control panel	BL at center of office	BL at center of rest room	BL at center of lunch room	Total	? 0.1 mg/m³ 1-2 X MAC	2 X MAC
12-1-59	00	00	00	00	04	00	—	—	01	01	04	04	04	04	29	1 ?	
12-2-59	00	00	00	00	00	00	—	—	00	00	01	01	01	02	29		
12-3-59	00	00	00	00	00	00	—	—	00	00	01	01	02	02	29		
12-4-59	00	00	00	00	01	00	—	—	01	00	02	02	02	04	29		
12-7-59	00	00	00	00	00	00	—	—	00	00	10	12	10	10	29	4 ✓	
12-8-59	00	00	00	00	00	00	—	—	00	00	02	02	04	04	29		
12-9-59	00	00	00	00	01	01	—	—	01	04	04	04	04	04	29		(2) ? ϕ
12-10-59	00	00	00	00	00	01	—	—	01	01	02	02	02	04 ✓	29	1 ?	
12-11-59	01	01	00	00	00	00	—	—	01	01	726	726	726	726	29	0	4 ←
12-14-59	00	00	00	00	08	01	—	—	01	10	10	10	12	10	29	6 ✓	(6) ? ϕ ←
12-15-59	00	00	00	00	07	07	—	—	01	10	10	10	12	◯	28	5 ✓	0
12-16-59	00	00	00	00	04	01	—	—	01	08	01	04	01	01	28	3 ? 1	
12-17-59	00	00	00	00	01	01	—	—	00	01	01	04	04	04	29		1 ? ϕ
12-18-59	01	00	00	00	00	00	—	—	08	01	01	01	01	01	29		1 ? ϕ
12-21-59	00	00	00	00	00	00	—	—	01	00	18	18	20	22	29	4 ? 3	1
12-22-59	00	00	00	00	00	01	—	—	01	00	01	01	01	01	29	1 ?	
12-23-59	00	00	00	00	00	00	—	—	00	00	731	731	25	731	29	1 ?	4 ←
12-24-59	00	00	00	00	00	00	—	—	00	00	731	731	731	731	29		(5) 74 ←
12-29-59	00	00	00	00	00	00	—	—	00	00	00	00	00	00	29	—	(2) ? ϕ
12-31-59	00	00	00	00	00	00	—	—	01	00	04	04	01	01	29	1 ? ϕ	1 ? ϕ
														Jack avg.	578	27	27
															29	02	02
															90.66	4.67	4.67

WCX-885 (Jan'48) Y-12 DATA SHEET

get Jan '59 sheets
Aug '59
highest lbs. condensed in 1959

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. J. F. Morehead
Building 9706-2

Plant: Y-12

Date: July 23, 1957

Copies To: W. A. Pfeiler
V. C. Jackson
File, Y-12NoRC

Subject: Analysis of Sludge Burner Water

Y/HG-0169/2

The effluent water from the sludge burner which discharges into Poplar Creek was sampled on July 10, 1957. The first sample was taken during a typical discharge and the second sample was taken after the deposited sediment had been stirred up thoroughly. The flow rate of the stream was measured to be approximately 40 gallons per minute. The solids were separated from the solution with a centrifuge and the mercury content in each phase was measured on the mercurometer. The results are tabulated below.

Sample	Mercury in Solution (µg/ml)	Mercury in Solids (µg/ml)
Normal discharge	4	8
Stirred discharge	10	190

It will be noted that the major portion of the mercury content is located in the solid phase. It would therefore seem that a sedimentation pit would be a logical manner for decontaminating the discharge water.

H. R. Gwinn

H. R. Gwinn

VCJ:fd

12 µg/ml 40 gal/min
12000 µg/l 151 l/min

1.8 g/min
5.7 kg/day

Sludge Burner

	Time	Total $\mu g Hg$	ft^3	$\mu g/ft^3$	g/day
I 1-9-58	1:30-2:40PM	236	56	4.21	7.43
II 1-9-58	2:45-3:45PM	113	48	2.35	4.15
III 1-10-58	10:40-3:20PM	3071	304	10.1	17.82

avg 9.80 g/day

Y/HG-0169/3

Y/HG-0021

ALPHA-4 AUXILIARY INVENTORY 5-1-62

Feed solid solution in storage 9201-5: 4.721 gals. or 691 Lbs. salt

Feed solids on hand	138 drums
Extract solids on hand	9 drums

C1-10

Sludge on hand	42 drums
Dirt screened	73 drums
Dirt not screened - about	400 drums

Solvent delivered to 9201-4 from C1-10, from 1-1-62 to 5-1-62

	Cond.	Decant	Total
January	22.744	6.314	29.058
February	32.619	43.312	75.931
March	39.505	43.003	82.508
April	12.782	24.977	37.759
Total for Year			225.256

Anthracite added to feed filters 5-2-62 as follows:

G-211-1)	51.0 Bags	#1
G-211-2)	20.5 Bags	#2
	20. Bags	#3
	1. Bag	#4
	12.5 Bags	#6
Total	113.0 Bags	

Anthracite on hand 250 Bags #1.

Activated carbon on hand -- 108 drums
Approximate weight - 145 lbs. WG 10-30.

Pillows plexiglass 16 drums - size 5/8" x 1".

Stored in Bldg. 9720-1

IR 120 Cation 49,336 lbs.
265 lbs. per drum = 5 cu. ft.

IR 401 Anion 60,564 lbs.
210 lbs. per drum = 5 cu. ft.

CCV:bfg

UNCLASSIFIED

M-54

UNION CARBIDE

INTERNAL CORRESPONDENCE

NUCLEAR DIVISION

POST OFFICE BOX Y, OAK RIDGE, TENNESSEE 37830

Y/HG-0547

To (Name) Mr. V. B. Gritzner

Division

Location Building 9201-5

Date December 7, 1970

Originating Dept.

Answering letter date

Copy to D. W. Smith
J. N. Turpin
J. S. Klobe (NoY-12RC)

Subject Mercury Recovery

A preliminary investigation of Building 81-10 was made by John Turpin on December 4, 1970, to determine the condition of the equipment and the inventory available for processing. This will be followed by a more detailed Engineering estimate initiated by Mark Grim. The results of this investigation are as follows:

There is an estimated 1,200,000 pounds of feed stored in 1600 drums at the site. Almost all drums are open. About 3% of the drums are unsound.

Based on past experience:

$$\frac{1\text{\# of Hg.}}{20\text{\# feed}} \times 1.2 \times 10^{6}\text{\#/feed} = 60{,}000\text{\# Hg. (est.)}$$

Hg. Wt. Estimate

Decomposer graphite - 500 drums - 20# Hg./drum
Dirt and gravel - 200 drums - 10# Hg./drum
Sludge and filter cake - 500 drums - 20# Hg./drum
Solids, salt, and carbonates - 400 drums - 20# Hg./drum

(Based on D. W. Smith's letter of 7-14-66: 81-10 inventory = 75,000# Hg.)

LABOR (This is estimated with a fairly large contingency)

Electrical - 120 Man-days

Relamp, replace four cubicles in motor control center, remove and replace 10 motors, rewire control panel, remove and replace 15 electrically operated valves and all new wiring for N-H roaster. Replace miscellaneous switches, wire, receptacles, etc.

Instrument Mechanic - 80 Man-days

Calibrate control instruments; install thermocouples, flame rods, control valves for N-H roaster. Repair and adjust instruments in central control room tune system.

UCN-7721-8
12 1-661

9/22/95 pm

OAK RIDGE Y-12 PLANT INFORMATION CONTROL FORM

DOCUMENT DESCRIPTION (Completed By Requesting Division)

Document No.	Author's Telephone No.	Acct. No.	Date of Request
Y/HG-0547	6-0263	2366000 3	9/8/95

Unclassified Title: MERCURY RECOVERY, BUILDING 9201-5 (DECEMBER 7, 1970) (M-54)

Author(s): Requestor: Steve Wiley

TYPE: ☐ Formal Report ☐ Informal Report ☐ Progress/Status Report ☐ Co-Op Report ☐ Thesis/Term Paper

☐ Oral Presentation (identify meeting, sponsor, location, date):

☐ Journal Article (Identify Journal):

☒ Other (Specify): To Be Released to ChemRisk, Phase II

Document will be published in proceedings ☑ No ☐ Yes

Document will be distributed at meeting ☑ No ☐ Yes

Document has patent or invention significance ☐ No ☐ Yes (Identify)

Document has been previously released ☑ No ☐ Yes (Reference)

DIVISION REVIEW AND APPROVAL (Completed By Requesting Division)

TECHNICAL CLASSIFICATION REVIEW (Divisional Classification Representative)

Title(s): Unclassified Abstract: —

DOCUMENT: Level Unclassified Category —

R.F. Quigh (Signature) — 18 Sept 1995 (Date)

Y-12 Classification Office

DOCUMENT REQUEST APPROVED (Division or Department)

[signature] (Signature) — 9/15/95 (Date)

(Signature) — (Date)

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Y-12 Central Files	Y-12 RC	Y-12 RC	Y-12 RC
TIC File	L.L. McCauley		
	S.W. Wiley		
	R.M. Keyser		

Distribution Remarks: Unlimited (ChemRisk)

APPROVAL AND RELEASE

Date Received	Date Initiated
	9/15/95

☑ CLASSIFICATIONS:

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DOCUMENT:

Level U Category —

Weapons Data — Sigma —

[signature] (Y-12 Classification Office) — 9/18/95 (Date)

☐ _____ Editor Date

☑ waived [signature] Patent Office Date

☐ _____ Date

☐ _____ Date

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P.L. McKenney (Technical Information Office) — 9/22/95 (Date)

Conditions/Remarks:

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UNION CARBIDE **INTERNAL CORRESPONDENCE**

NUCLEAR DIVISION

POST OFFICE BOX Y, OAK RIDGE, TENNESSEE 37830

To (Name) Mr. R. D. Williams
Division
Location Building 9212

Date March 12, 1971
Originating Dept.
Answering letter date
Subject 81-10

Copy to
J. R. Barkman
M. S. Grim
V. B. Gritzner
H. A. Keen
J. S. Klobe
R. J. McAlister
D. W. Smith
J. N. Turpin (NoY-12RC)

RECEIVED
MAR 15 1971
R. D. WILLIAMS

Work is in progress to transfer all of the mercury-contaminated materials stored at 81-10 into sound drums. The main objective of this work will be to prevent mercury contamination of the local environment and prepare the materials for either long-term storage or sale to an outside buyer.

It is estimated that about 1200 man-hours direct labor will be required to transfer and consolidate the 1600 open drums into about 1200 closed drums. We will probably purchase about 600 drums with lids and an additional 600 lids and clamps. About 600 of the existing drums would be reusable if they had covers. All drums should be suitable for safe handling and truck shipment.

A minimum of 200 man-hours of maintenance labor will be required to provide water, electricity, drinking fountain, toilet facilities, equipment modification, scales repair, and air sampling stations.

The recommended available equipment that may be used consists of the following:

1. 3000# fork truck
2. Drum squeezer
3. Fork truck with drum handling attachment
4. Drum dumper
5. One screener
6. Miscellaneous hand tools (shovels, hoes, mattocks, crow bar, pliers, wrenches, hammers, screwdrivers, sledge hammer, water hoses, mercury containers, vacuum cleaner, brooms, dust pans)

[redacted] CONFIDENTIAL

From: J. H. Smith
R. D. Williams
E. A. Pluhar
Jim Sykes

To:
UNION CARBIDE CORPORATION
PURCHASING DIVISION
P. O. BOX M
OAK RIDGE, TENNESSEE 37830
Area Code: 615 Telephone: 483-8611 Ext.-

SUBJECT

DATE 8-30-71

Reply Message

FOLD

MESSAGE

This is a copy of letter we intend to send out covering the sale of mercury contaminated material.

DRMcCammon/

SIGNED D. R. McCammon

DATE OF REPLY

REPLY TO

REPLY

SIGNED

~~RECIPIENT RETURNS THIS COPY TO SENDER~~

droplets of mercury metal. It contains less than 5% ash and is combustible. The graphite ranges in a size of egg and smaller, but nothing less than 2-mesh. Three random samples of the carbon were submitted to the Plant Laboratory for mercury content and they were reported as being 20%, 22%, and 30% by weight.

Carbonate Filter Solids. This is a moist to dry mixture of lithium carbonate, lithium hydroxide, and finely divided mercury. It is mostly fusible lithium hydroxide and lithium carbonate with about 20% water. This material would probably melt in a roaster. Two random samples were submitted to the Plant Laboratory for mercury content and they were reported as being 2.4% and 11.1% by weight.

Process Filter Solids. This is a process filter cake which contains finely dispersed mercury in a cake of miscellaneous dirt, sludge, lithium carbonate, and about 10% ash. These solids were found to be heavily contaminated with mercury but a practicable method to separate the mercury was not found. Decanting and de-sludging were attempted but were not very successful. Three random samples were submitted to the Plant Laboratory for mercury content and they were reported as being approximately 30%, 40%, and greater than 50% by weight.

UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX M, OAK RIDGE, TENNESSEE 37830

Gentlemen:

The Company (Union Carbide Corporation, Nuclear Division) has available for sale 1274 drums of Government-owned mercury contaminated material described below. The material is to be purchased by the bidder; that is, recovered mercury is not to be returned to the Company.

Material	Drums (55 gal.)	Gross Weight (lbs.)	Approx. Mercury Content %	Pounds
Carbon	534	296,820	25	74,205
Carbonate Filter Solids	252	83,160	6	4,990
Process Filter Solids	104	76,237	40	30,495
Process Sludge	156	98,945	14	13,852
Sump Sludge	156	72,410	3.7	2,679
Mixed Rock, Dirt, Sweeps, etc.	72	44,259	8	3,541
Total	1,274	671,831		129,762

Carbon. This coke-like graphite is fairly dry and is saturated with very fine droplets of mercury metal. It contains less than 5% ash and is combustible. The graphite ranges in a size of egg and smaller, but nothing less than 2-mesh. Three random samples of the carbon were submitted to the Plant Laboratory for mercury content and they were reported as being 20%, 22%, and 30% by weight.

Carbonate Filter Solids. This is a moist to dry mixture of lithium carbonate, lithium hydroxide, and finely divided mercury. It is mostly fusible lithium hydroxide and lithium carbonate with about 20% water. This material would probably melt in a roaster. Two random samples were submitted to the Plant Laboratory for mercury content and they were reported as being 2.4% and 11.1% by weight.

Process Filter Solids. This is a process filter cake which contains finely dispersed mercury in a cake of miscellaneous dirt, sludge, lithium carbonate, and about 10% ash. These solids were found to be heavily contaminated with mercury but a practicable method to separate the mercury was not found. Decanting and de-sludging were attempted but were not very successful. Three random samples were submitted to the Plant Laboratory for mercury content and they were reported as being approximately 30%, 40%, and greater than 50% by weight.

Process Sludge. This is a wet slurry cake of miscellaneous solids, including grease and oil. It contains about 60% water and accumulations of rust and dirt. The mercury is finely divided and cannot settle out. It probably includes about 15% ash. All of this material was decanted and run through the de-sludger with significant quantity of mercury being recovered. Two random samples from the de-sludged material were submitted to the Plant Laboratory for mercury content and they were reported as being 10.3% and 18.6% by weight.

Sump Sludge. This is a wet slurry of very fine non-metallic sedimentary sludge, having a dispersion of mercury throughout. The gross weight includes about 60% water. It probably includes about 15% ash. Two random samples were submitted to the Plant Laboratory for mercury content and they were reported to be 1% and 10% by weight.

Miscellaneous Rock, Dirt, Sweeps, etc. (Mixed). This material is a somewhat non-homogeneous mixture of floor sweeping compound, gravel, paper, fine wire, dirt, and other miscellaneous materials containing a finely dispersed quantity of mercury. It is usually fairly dry and includes about 85% ash.

In his recovery process the successful bidder must comply with all State, Local, and Federal Regulations applicable to air and water pollution. Prior to entering into a contract the Company will require evidence in the form of permits or other documents which indicate that the responsible Government agencies have reviewed and approved the successful bidder's recovery operation.

At the present time we are considering sale of the material under one of the following described arrangements. Both of these have disadvantages. We solicit your recommendations involving other arrangements under which the material can be sold or provisions under which the designated problem areas can be resolved.

ARRANGEMENT I. Sale of the material on the basis of recovery of contained mercury at a price per pound for mercury recovered. The problems associated with this arrangement are two-fold:

(a) The difficulty of evaluating bidder's method of recovery to reflect variations in yield possibilities. We understand in the retort recovery method 99% of the contained mercury can be extracted.

(b) The second problem involves accounting. As this material is Government-owned, it is necessary to positively account for all mercury which is recovered. At this time it appears that a Company representative would have to check the operation at the work site 100% of the time. This is expensive. From your experience perhaps you can suggest other methods of accounting which will satisfy strict auditing requirements.

ARRANGEMENT II. Sale of all the material on a unit price per pound basis, with delivery to be made upon written notice from Purchaser in lots of 30,000 to 35,000 pounds (truck-load lots). Both parties to the contract would have the right to cancel any undelivered quantities by giving written notice at any time. This arrangement entails considerable risk. The risk is minimized somewhat for the Purchaser in that he is buying in truck-load lots and can cancel should he find recovery of mercury

falling below his expectations. For the bidder's pre-bid evaluation, this arrangement would involve delivery of samples of the material selected by the Company as directed by the bidder. Bidders would be charged for the samples at rates mutually agreed upon. We will appreciate any comments you have regarding Arrangement II, your ideas regarding sampling of the material, the quantity you would expect to receive in a sample, and a fair price which you would expect to pay, FOB Oak Ridge, Tennessee, for the sample.

If you are interested in bidding on this material, we will appreciate receiving your reply to this letter by September 15, 1971.

Please indicate your estimate of the time required to recover mercury under a contract using your process.

Yours very truly,

Sales Office
Government Property

DRMcCammon/mm

INTERNAL CORRESPONDENCE

RECEIVED
SEP 2 1 00 PM '71
R.D.WILLIAMS

NUCLEAR DIVISION

POST OFFICE BOX Y, OAK RIDGE, TENNESSEE 37830

To (Name) Mr. D. W. Smith
Division
Location Building 9201-5

Date August 27, 1971

Originating Dept.

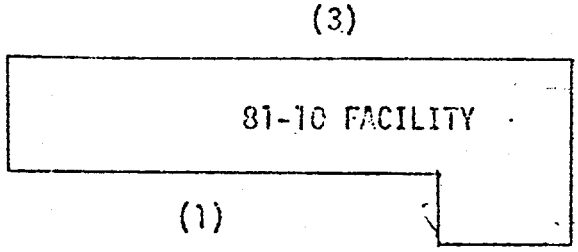
Answering letter date

Copy to V. B. Critzner
File (RCY-12RC)

Subject Core Samples
81-10 Area

RECEIVED
AUG 27 1971
V. B. CRITZNER

Core samples were taken at three locations in the immediate vicinity of the 81-10 mercury salvage facility on August 25-27, 1971. Individual samples of one to two feet were taken of the same location to a depth of 6 to 14 feet. The samples showed that mercury exists underground near the 81-10 facility. The results of the sampling are given below. No analytical results were taken.



LOCATION	DEPTH	INDIVIDUAL SAMPLES	RESULTS
1	8 ft.	1 ft.	Between 3 and 5 feet slight amounts of mercury were evident.
2	13-1/2 ft.	1 ft., 1-1/2 ft.	Very slight amounts of mercury were evident in the top foot. The 2nd foot showed no evidence. At 3-1/2 feet very slight evidence was found. Between 4 and 8=1/2 feet no evidence was noticed. At 9 feet mercury was very much in evidence. There was no mercury at 10-1/2 feet. At 12 feet mercury was again very evident. From 12 to 13-1/2 feet down the evidence of mercury dissipated to nothing at 13-1/ feet.
3	6-1/2 ft.	1 ft., 1-1/2 ft.	No evidence whatsoever of mercury.

P. D. Guettner

P. D. Guettner

PDG:sb

UNION CARBIDE

INTERNAL CORRESPONDENCE

NUCLEAR DIVISION

POST OFFICE BOX Y, OAK RIDGE, TENNESSEE 37830

To (Name) Mr. V. B. Gritzner
Division
Location Building 9201-5

Date September 21, 1971
Originating Dept. Alpha-5 Processing
Answering letter date

Copy to R. D. Williams
File (NoY-12RC)

Subject Building 81-10
Core Samples

The composited core samples from the general area at Building 81-10 were analyzed and the following results were reported:

Sample Location	Req. #	% Hg by Weight
South of storage pad #1	354273	0.014
North of furnace area in drainage ditch #2	354274	0.052
North of storage pad #3	354275	0.020

If any further details are desired, contact the writer or J. N. Turpin.

D. W. Smith

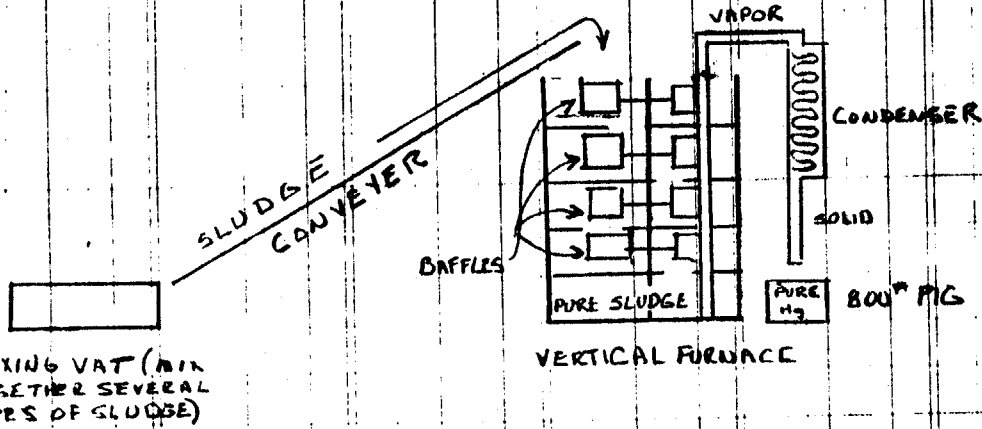
DWS:sa

JTA
1-24-72

COST ESTIMATE OF H_g RECOVERY FROM SLUDGE

OPERATION ESTIMATES / N. DOW & E. H. JOHNSON

H_g COULD BE RECOVERED FROM THE 1,274 DRUMS OF SLUDGE LOCATED IN BLDG. 81-10. FROM THE SLUDGE GROSS WEIGHT OF 671,831#, IT IS ESTIMATED ON THE BASIS OF LAB SAMPLES THAT 99.402 OF PURE H_g COULD BE RECOVERED. THIS SLUDGE WOULD BE FILTERED THRU A VERTICAL, MULTI-HEARTH, GAS FIRED FURNACE, WITH THE H_g BEING SEPARATED FROM THE SLUDGE AS VAPOR AND THEN COLLECTED AS A SOLID WHEN COOLED.



RECOVERY FURNACE START-UP COST - AN ENGINEERING ESTIMATE WAS MADE BY R.M. KEMPER JR. ON DEC. 16, 1970 FOR $130,000. SINCE DEC. 16 1970, COST ESCALATION IS ESTIMATED AT 15% / H.D. DUNCAN, COST ENGINEERING. THEREFORE TOTAL COST WOULD BE $150,000

JTA

Hg SLUDGE REDRUMMING

THERE ARE PRESENTLY 1,274 DRUMS OF Hg SLUDGE IN BLDG. 9110. THE SLUDGE IS CONTAINED IN USED DRUMS WITH NO TOPS.

IF IT IS DECIDED TO SHIP THE SLUDGE TO AN OUTSIDE VENDOR IT MUST BE REDRUMMED TO CONFORM TO ICC REGULATIONS, USED DRUMS (SPEC. 17H, STORES # 02-089-6420) WOULD BE SUITABLE WITH RING CLAMPS TO FASTEN THE TOPS. (PER JIM COX - TRAFFIC).

REDRUMMING LABOR - $\frac{\text{40 DRUMS/DAY/E. JOHNSON}}{\text{2 MEN (16 HRS)}}$ = 2.5 DRUMS/man HR.

$\frac{\text{1274 DRUMS}}{\text{2.5 DRUMS/man hr.}}$ = 510 man HR x $25/HR FOR ACCT. 2690 = $12,740.

DRUM COST $5.25/USED DRUM X 1274 DRUMS = $6,689.

COST INCLUDES DRUM TOPS, RING CLAMPS AN TRANSPORTATION FROM KNOXVILLE TO OAK RIDGE. (PER C.W. STEGALL)

$19,429

$15

12,740 @ 40% for out of pocket cost.

5096.00

+6689

$11,785

UCN-3889A (25 11-62) DATA SHEET

Condition —

1274 drums stored at Bldg. 81-10
671,831 lbs of Bulk weight
99 400 lbs Hg.

Full costs to recover at Y12

Cost to repair Hg facility = $150,000 or $1.50/lb

Operating Costs — 200,000 − 2,000 lb / $3.00

Out of Pocket Cost —

$1.50/lb capital
.80/lb operating — (40% of full cost)
$2.30/lb

Approx. market Value of Contained Hg — $270,000 ($2.70/lb)
" Recovery Cost — 230,000 ($2.30/lb)
Difference — $40 000

If we can get $40,000 or more [illegible]

UNION CARBIDE

NUCLEAR DIVISION

INTERNAL CORRESPONDENCE

Y/HG-0057/28

January 22, 1982

D. E. Brashears, 9736, MS-1

Removal of Building 81-10 and the Mercury Recovery Facility

The request has been made for Industrial Hygiene to assess the extent of mercury contamination in Building 81-10 and to make recommendations on its demolition and removal.

Background information reveals this facility to be grossly contaminated. On January 21, 1982, Industrial Hygiene conducted a survey of the following location and found the airborne concentration to exceed the scale on the mercury meter.

1. Cracks in concrete slab of Building 81-10.
2. All drain lines.
3. Sump pit.
4. Valve north of furnace.

It is Industrial Hygiene's understanding that the entire structure is to be removed. Considering the above sampling results and background information on operation of the facility, the industrial hygiene recommendations for the subject removal include the following:

1. When removing piping from the recovery facility, prepare to catch and contain significant amounts of residual mercury. Special considerations should be given the large condensing columns.
2. Break and remove all concrete slabs.
3. The sump pit contains water and must be contained before removing concrete pit.

*4. Remove soil approximately 3-4 ft. in depth under all slabs and within 10' parimeter.

5. Fill with uncontaminated soil or gravel.

**6. Remove asphalt and approximately 5-8' of soil under the facility.

7. Remove all drain lines and valves.

8. The drain line under the road leading to the holding pool should be opened and filled with concrete.

9. Remove water from holding pool and decontaminate pool (should pool not be removed).

*Excavating below this depth for mercury is usually not cost effective.

**NE of the furnace, the soil was removed to this depth and asphalt replaced it in order to eliminate seepage through the mound.

All material removed from the area should be disposed of as contaminated. Special checks can be made for those items with questionable contamination. Industrial Hygiene will conduct sampling surveys during demolition and will have additional personal protective recommendations for operating personnel.

Should you have any questions concerning this matter, please call 4-1594.

G. L. Bean, 9706-2, MS-2 (4-1594)
Industrial Hygiene Group

GLB:sc

cc: File - GLB - RC

Y/TS-1610

UNION CARBIDE

NUCLEAR DIVISION

RECEIVED

September 22, 1983

[only 6 of 13 pages copied SMJ]

Distribution

Stripping Plan for Building 81-10

Enclosed is a draft of the Stripping Plan for Building 81-10. Building 81-10 will be stripped as a pilot project to develop criteria and methods for the stripping of Alpha-4. The current start date for stripping Building 81-10 is November 1, 1983.

Please review this plan and return comments to J. S. Anderson, Building 9201-5, MS-4 by October 7, 1983.

F. V. Tilson

F. V. Tilson, 9201-5, MS-4

FVT:JSA:ssa

Enclosure: Draft - "Stripping Plan for Building 81-10 Mercury Recovery Roasting Furnace"

Underwood —
See your responsibilities,
such as pg 12. —
Pls provide comments as
necessary to Homer Moss
JSA
10/04/83

Distribution

J. S. Anderson, 9201-5, MS-4
H. L. Bailey, 9739, MS-3
G. L. Bean, 9706-2, MS-2
H. C. Beeson, 9704-2, MS-22
H. D. Bewley, 9212, MS-1A
T. R. Butz, 9106, MS-5
W. H. Dodson, 9202, MS-5
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D. A. Jennings, 9201-5, MS-7
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J. M. Mills, Jr., 9731, MS-2
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D. W. Smith, 9201-5, MS-4
R. E. Stubblefield, 9201-5, MS-4
W. J. Wilcox, K-1001, MS-132 (ORGDP)
R. D. Williams, 9704-2, MS-15
L. F. Willis, 9704-2, MS-20
W. J. Yaggi, 9212, MS-2
G. F. Zanolli, 9706-2, MS-2
File - FVT - NoRC

STRIPPING PLAN FOR BUILDING 81-10 MERCURY RECOVERY ROASTING FURNACE

INTRODUCTION

Plans are being formulated at this time to strip and dispose of the process equipment located in Building 9201-4 of the Y-12 Plant. This equipment was used in the Lithium Isotope Separation Process in the late 1950's and early 1960's. Bulk mercury was removed from the equipment in 1977, and the columns were flushed with water. The water was treated to remove mercury to required levels and discharged to the industrial ditch leading to New Hope Pond.

To assist in obtaining pertinent data and in developing methods to be used in the Alpha-4 stripping campaign, it is desired to proceed first with the stripping of Building 81-10 as a pilot project. This report presents the plan to be used for stripping Building 81-10.

FACILITY DESCRIPTION

The Building 81-10 Mercury Recovery Roasting Furnace was installed and operated from March 1957 through July 1962 to recover raw mercury from various filter sludges, sump and tank cleanings, and other waste materials generated in the Lithium Isotope Separation Processes. The original facility consisted of a vertical, eight-hearth Nichols - Hershoff furnace fired by natural gas; feed preparation and loading equipment; a condenser system; and other auxiliary equipment required to operate the furnace. Steel support structures provide access to the top of the furnace as well as support for various pipes, conduit, and other control equipment.

The process involved feeding mercury contaminated sludge mixed with crushed coke and sand to the top of the furnace. The coke aided in reducing mercury oxide and also supplied a portion of the heat to the furnace. The sand was used to prevent the wet sludge from sticking to the feed mechanism. Rabble arms driven by a motor at the bottom of the furnace moved the feed material across the top of each hearth. The hearths contained holes that allowed the feed material to pass down to the next hearth. As the material passed from hearth to hearth, it was burned to ashes; and the mercury was released as a vapor. The mercury vapor was fed through a condenser and salvaged as a liquid. The mercury was returned to the Lithium Isotope Separation Process, and the ashes were discarded as solid wastes.

STRIPPING PLAN

Assumptions

Based on the present Environmental Protection Agency (EPA) Regulations for Identifying Hazardous Wastes (40 CFR 261) and the Tennessee Hazardous Waste Management Rules (Chapter 1200-1-11), the definition of a hazardous waste is determined by the results of an Extraction Procedure Toxicity Test (leach test) performed on the waste material. Solid wastes may be classified as nonhazardous if the EP test results in mercury concentrations $\leq$0.20 mg/L. Preliminary tests made on various types of equipment in Alpha-4 indicate that most of the solid wastes fall into the nonhazardous category. Disposal of these wastes can be made in a demolition landfill or perhaps be sold to a licensed salvage dealer.[1]

---

[1]R. B. Bustamante, J. M. Napier, and P. F. Meredith, Preliminary Report Decontamination Recommendations of Building 9201-4, Y/DZ-68, March 1, 1983.

If the above guidelines are adopted, cleaning efforts on the equipment removed would probably be reduced to removing any visible mercury, sludge, and loose scale found during disassembly by mechanical means such as vacuuming, brushing, or scraping. This process would require disassembling the equipment to a point at which any visible mercury, sludge, or loose scale could be seen and removed. If these guidelines are not adopted and more stringent guidelines result, more extensive cleaning methods will have to be developed. These methods would probably involve complicated mechanical and/or solution cleaning. The effluents would have to be treated to remove the mercury prior to discarding. All materials stripped from Building 81-10 will thus be stripped as outlined in the following sections of this plan and stored until the final sampling plan, disposal guidelines, and disposal methods are determined.

Stripping Requirements

1. All drains will be sealed with removable plugs during stripping activities to prevent a loss of mercury to the creek. These drains will be opened during off shifts to allow rainwater to drain. Underground drain lines will not be removed or decontaminated at this time. Visible mercury and sludge will be removed from drain openings and sumps both during and at the end of the stripping activities.

2. All types of insulation materials will be checked to determine if asbestos is present. All insulation will be removed prior to stripping any equipment. All insulation will be identified, placed in plastic bags, placed in drums, and stored for eventual disposal.

3. All materials will be cleaned by mechanical means such as vacuuming, brushing, or scraping. An attempt will be made to keep liquid cleaning methods at a minimum to avoid having contaminated water to treat for disposal.

4. All paint chips, rust, scale, sludge, and sweepings will be loaded in plastic bags, placed in drums, and discarded with drums of like materials now awaiting disposal in Alpha-4. All water used for cleaning will be retained for disposal at Alpha-4.

5. Decisions concerning the best place to remove or disassemble the equipment will be made jointly in the field by Maintenance and Operations supervisory personnel.

6. Equipment not in direct contact with the process materials and not suspected to contain visual mercury will be stripped first. Examples are electrical conduit and wires, motors, electrical controls, water and natural gas lines, and safety shower and eyewash stations. Equipment in direct contact with the process materials or equipment suspected of containing mercury will be removed last. Examples of this type equipment are the furnace, the slurry making and loading equipment, and the off-gas and condenser system.

7. As the equipment is stripped it will be cleaned, separated, and stored in three piles under the shed. One pile will contain equipment where no visible mercury was found and that was not in direct contact with the process materials. The second pile will contain equipment that was in

direct contact with the process materials but which contained no visible mercury. The third pile will contain equipment in which visible mercury was found.

Stripping Operations

Since the stripping operations involved with this project require continuous field decisions to be made, a detailed stripping procedure governing the removal and cleaning of each piece of equipment is not practical to write. Only the generalized procedure that follows, which is governed by the requirements stated in this stripping plan as a whole, is therefore the procedure that will be used in this particular effort.

Process operators will perform all cleaning activities and all sorting, packaging, and storing activities. Maintenance craft personnel will do the actual stripping of equipment. Other Plant support groups such as Utilities, Industrial Hygiene, Health Physics, Safety, and Engineering will provide services as requested by Operations supervisory personnel.

Generalized Procedures

1. All drains will have temporary plugs installed.

2. Utilities and electrical services to the equipment will be deactivated by the appropriate Plant group.

3. Insulation material will be removed, cleaned, and packaged for disposal in plastic bags and drums.

4. Equipment not in direct contact with process materials will be removed, cleaned, sorted, and stored.

5. Remaining equipment will be removed, cleaned, sorted, and stored.

6 Drain openings and sumps will be cleaned.

7. The pad areas and adjacent shed area will be cleaned.

Abnormal Conditions and Personnel Training

Major abnormal conditions are not anticipated; however, all personnel will be thoroughly trained in all phases of the stripping operation, including the proposed work and job assignments, the potential hazards, and the protective measures to be used. The training material is documented in the "Health and Safety Training Instructions for Mercury Stripping Operations."

HEALTH AND SAFETY CONSIDERATIONS

Mercury Hazards

Toxicity - Mercury and its compounds may be absorbed through the skin, the gastrointestinal tract, and the lungs. The principal hazard is by inhalation, but skin absorption must be taken into consideration when evaluating the overall hazard. The adverse effects of mercury absorption have been investigated by many researchers and are well documented.

Acute poisoning has the symptoms of tightness in the chest, difficulty in breathing, coughing, and pain in the chest. In chronic poisoning, psychic and emotional disturbances are characteristic: fine tremors may affect the

PROJECT SUMMARY

ARCHEOLOGICAL AND HISTORICAL REVIEW (AHR) FOR BUILDING 81-10 DEMOLITION, Y-12 PLANT

PROPOSED ACTION: The U. S. Department of Energy Oak Ridge Operations Office (DOE-ORO) proposes to demolish Building 81-10 at the Y-12 Plant. The building structure, which consists of an open shed with a roof supported by wooden columns, would be removed and the concrete foundation would be left intact. No ground-disturbing activities would be associated with the proposed action.

LOCATION OF ACTION: The proposed action would take place at the Y-12 Plant on the DOE Oak Ridge Reservation in Anderson County, Tennessee (Fig. 1). Building 81-10 is located at the intersection of "G" Road and Third Street in the south central portion of the Y-12 Plant (Fig. 2).

DISCUSSION: Building 81-10 is an approximately 90-foot-long by 30-foot-wide open storage shed structure with a roof supported by wooden columns and a partial masonry wall at its east end. The building was originally constructed in 1943 as a tin shop and subsequently modified in 1957 to house a mercury roaster. In the late 1960s the mercury roaster was removed from the building, after which the building was used to temporarily hold mercury-contaminated soil. Its use as a temporary mercury-contaminated soil holding area was discontinued in the early 1980s, and the building has not been used since (see Table 1 for a comprehensive list detailing the chronological events at Building 81-10). Some of the support columns have been damaged or have deteriorated, portions of the roof and gutters are loose and unsecured, and the structure has been deemed to be unsafe for occupancy or use. DOE-ORO has determined that it is not practicable to implement alternatives to the demolition of Building 81-10 (such as adaptive use) in accordance with Section 111(a), 16 U.S.C. § 470h-3(a), because the structure is surplus and poses a considerable safety hazard to personnel due to a lack of structural stability. Photographs of Building 81-10, shown in Figs. 3 through 9, have been taken as a record of the existing site conditions at and around the structure. The proposed action would take place in a developed area and would not involve ground-disturbing activities.

DETERMINATION: DOE-ORO, pursuant to 36 CFR 800.4(c) and in consultation with the State Historic Preservation Officer (SHPO), has determined that Building 81-10 is eligible for inclusion in the National Register of Historic Places (National Register) and therefore has determined that the proposed demolition of Building 81-10 would have an adverse effect on a historic property that is eligible for inclusion in the National Register. In addition, DOE-ORO has determined the proposed action would have no effect on any archeological sites, relics, or structure included in or eligible for inclusion in the National Register.

Bldg. 81-10 structure DEMOLISHED: MARCH 18, 1995 BLACK

APPROVED

Technical Info

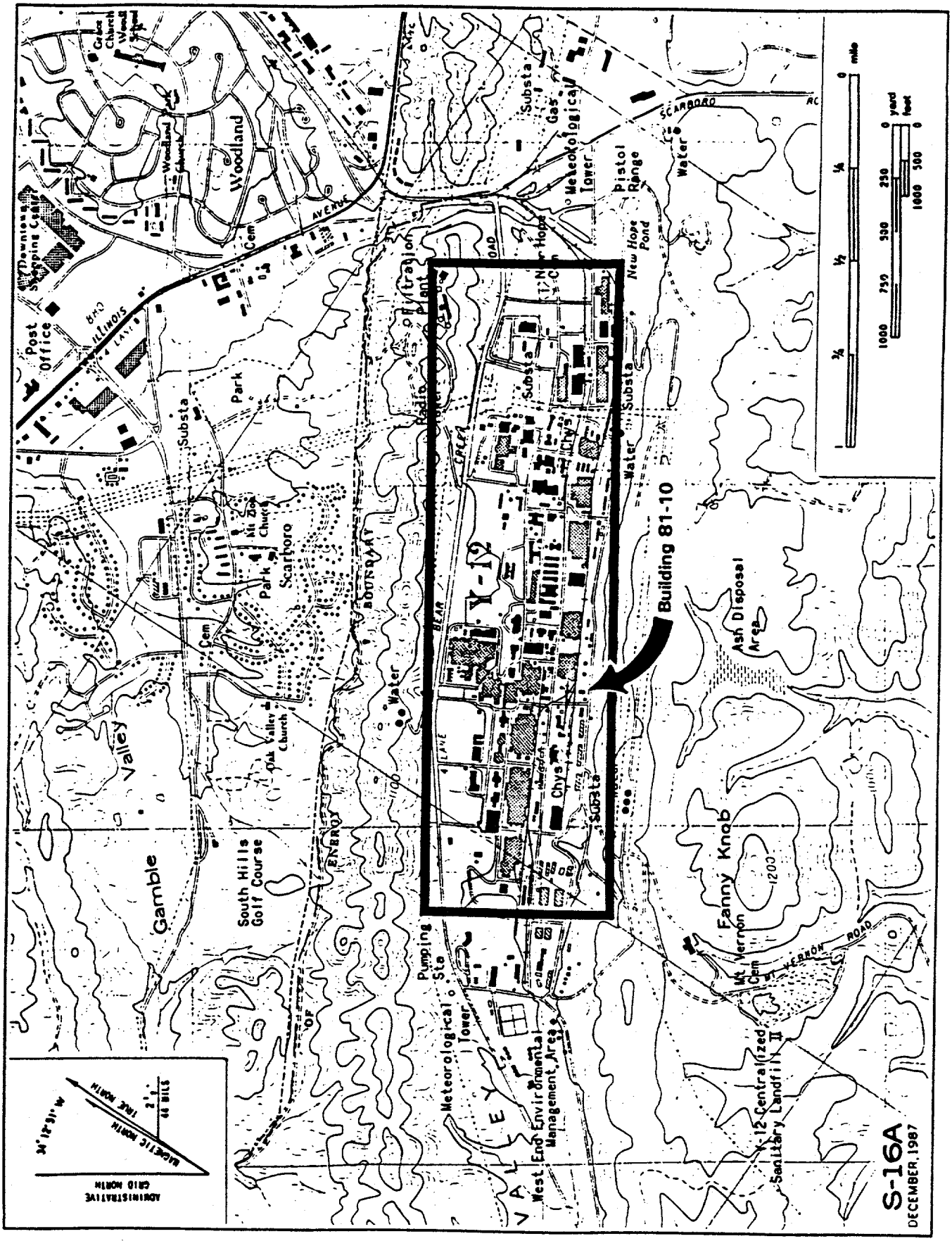


Fig. 1. Location of the Y-12 Plant on the Department of Energy Oak Ridge Reservation.

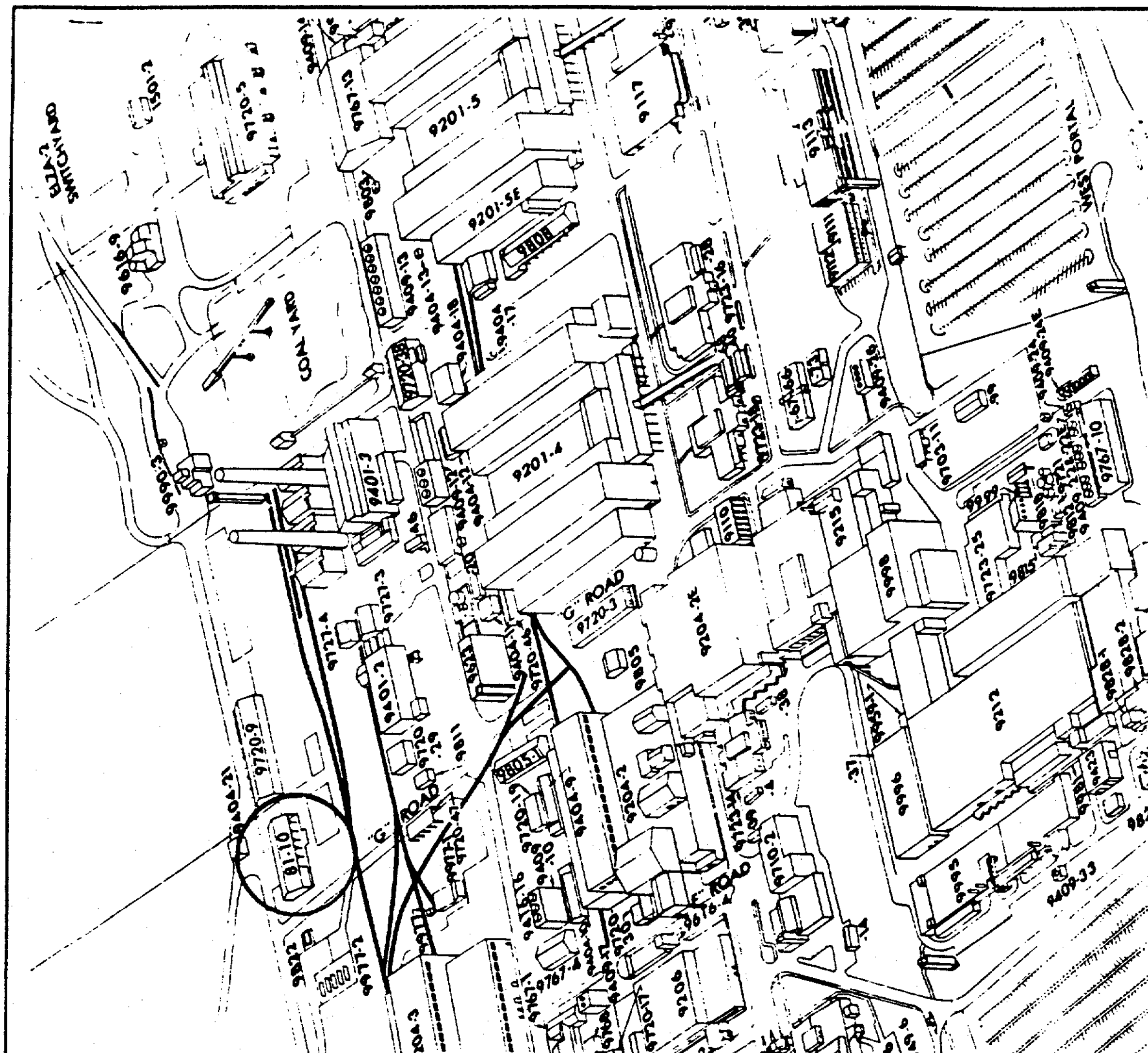


Fig. 2. Location of Building 81-10 in the south central portion of the Y-12 Plant.

Table 1. Chronological events at Building 81-10.

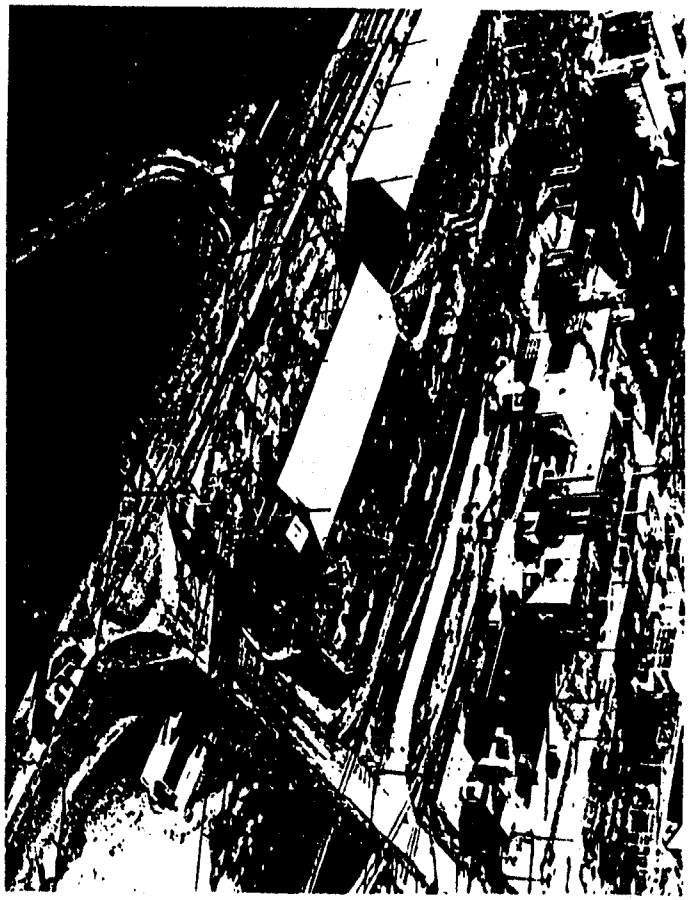
Year	Events
1943	Building 81-10 was constructed and used as a tin shop. The building was constructed over the original East Fork Poplar Creek channel. The creek channel was moved to the north of Building 81-10 and left as an open ditch until it was filled sometime between 1958 and 1963.
1957-1962	Building 81-10 was used for the operation of a mercury roasting furnace (mercury vapor extractor) that recovered mercury from sludges, wastes, contaminated soils, scrap from dismantled equipment, and other similar materials used at the Y-12 Plant (Union Carbide, 1983). During this time, soil from spills that occurred at Building 9201-2 between 1951 and 1955, some from the ramp area north of Building 9201-5 on July 17, 1956, and soils from an area between Building 9204-5 and 9201-5 in mid-1956 were processed at Building 81-10 (Comprehensive Environmental Response, Compensation, and Liability Act Phase II Report, January 1988).
1962	Mercury roasting furnace operation ceases (Wiggins, 1988a) (Y/TS-412).
1971	Building 81-10 and its sump were cleaned to secure the mercury-contaminated materials and recover loose mercury. An estimated 91,451 kg of mercury was removed from Building 81-10 and its sump with an estimated 32,270 kg mercury recovered and returned to Building 9201-4. The remaining mercury was unrecovered and disposed of in drums as scrap (McAlister, 1971). Three soil borings indicated evidence of mercury in subsurface (letter from P. D. Guettner to D. W. Smith, August 27, 1971).
1971-1984	Building 81-10 was used to store scrap metal and drums of sludge (Wiggins, 1988a) (Y/TS-412).
1983-1984	A two-phase site investigation study was conducted by the Oak Ridge National Laboratory (ORNL) to investigate subsurface mercury concentrations at Building 81-10. The investigation included installation of well nest 56-5 and the drilling and sampling of eight soil borings. Soil samples collected during the Phase I monitoring well installation process detected mercury on the order of hundreds of ppm as deep as 17 feet. During this phase, small beads of visible mercury were noted in samples at 6 feet below ground surface. Phase II soil samples indicated that two locations (B-3 and B-4) had total mercury concentrations greater than 1000 ppm. Water samples obtained from the monitoring wells indicated that the mercury was not mobile in the aqueous phase (Rothschild et al., 1984a) (ORNL/TM-9092). The Phases I and II sampling localities have since been excavated as part of the Perimeter Intrusion Detection Assessment System (PIDAS) and East Fork Poplar Creek tile replacement projects.
1984	Building 81-10 was used to stockpile mercury-contaminated soil [Remedial Feasibility Investigation (RFI) Report, November 1988]. The use of Building 81-10 to stockpile soil was discontinued and the soil was removed; however, the date of removal is unknown. Also, sometime after 1983-1984 the mercury roaster was dismantled and removed from the site. > 11-29-88
1987	Approximately 8,400 (± 500) cubic yards of soil (fill) material was removed from the area north of Building 81-10 between November 1987 and April 1988 for the Utility System Restoration Phase 3 (USR III), creek tile replacement, and PIDAS corridor projects. Monitoring wells 56-5 A, B, and C were plugged and abandoned due to construction (Wiggins, 1988a) (Y/TS-412). In addition, boring localities B-3, B-4, B-2, and B-7 were excavated or partially excavated.
1988	An RFI Plan was issued for Building 81-10.
1990	The Building 81-10 RFI Work Plan was implemented. The results of the RFI activities are summarized in a site characterization prepared by Earth Technology Inc. (draft report).

Building 81-10 Demolition, Y-12 Plant

Aerial view of Building 81-10 and surrounding facilities looking in a north-northwest direction.

Building 81-10 Demolition, Y-12 Plant

Aerial view of Building 81-10 looking in a northwest direction. Notice the metal frame structure at the east end of the building. This is the mercury roaster which was dismantled and removed from the site sometime after this photograph was taken on Nov. 29, 1983.



←9201-5

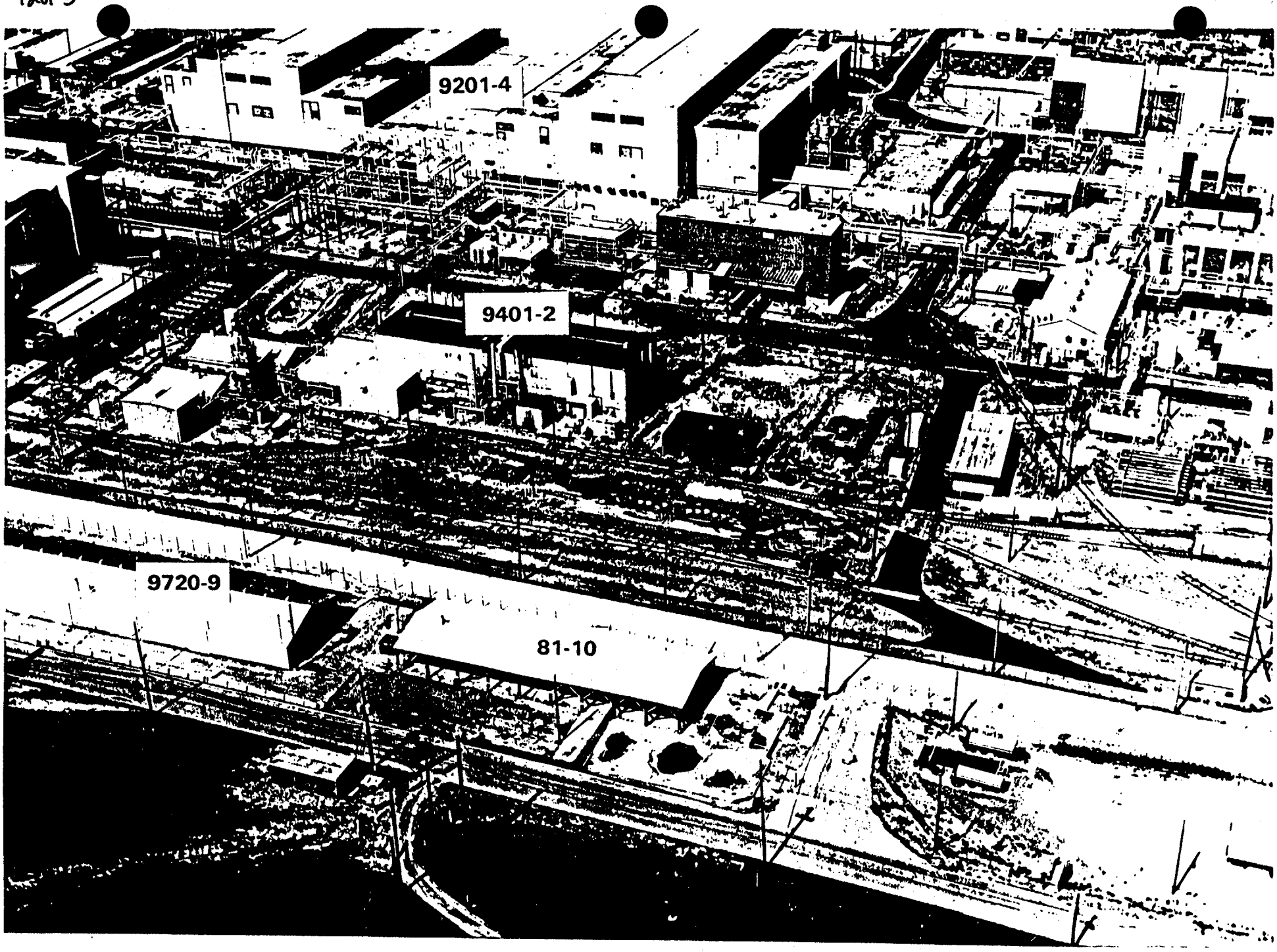
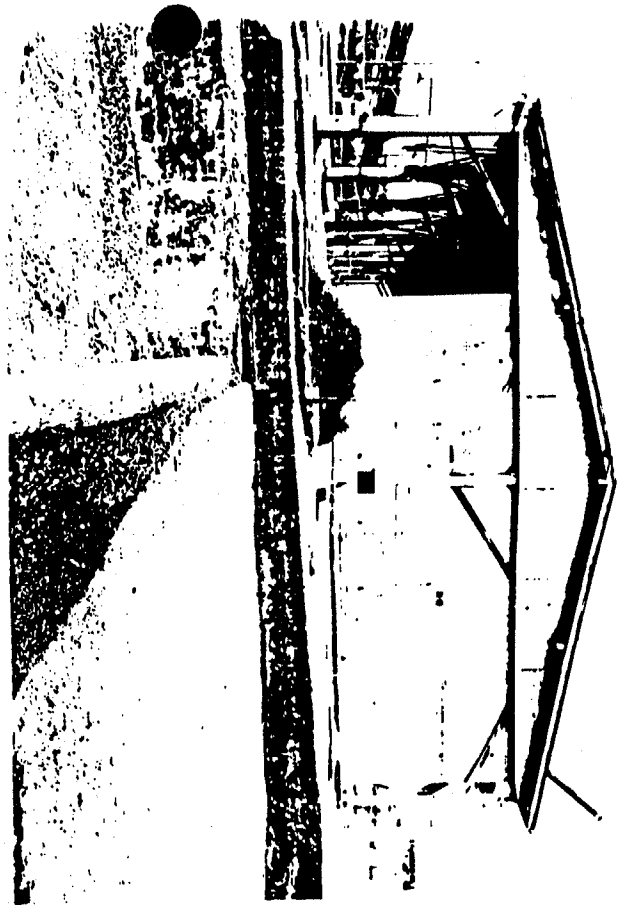
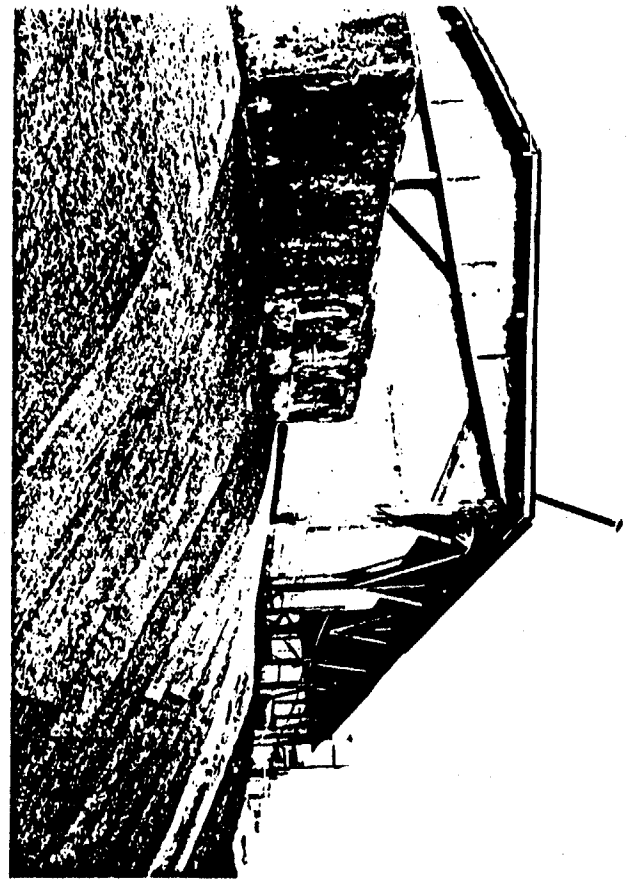


Fig. 3. View 1 – Aerial view of Building 81-10 and surrounding facilities looking in a north-northwest direction.



Building 81-10 Demolition, Y-12 Plant

East facade of Building 81-10.



Building 81-10 Demolition, Y-12 Plant

Northeast corner of Building 81-10.

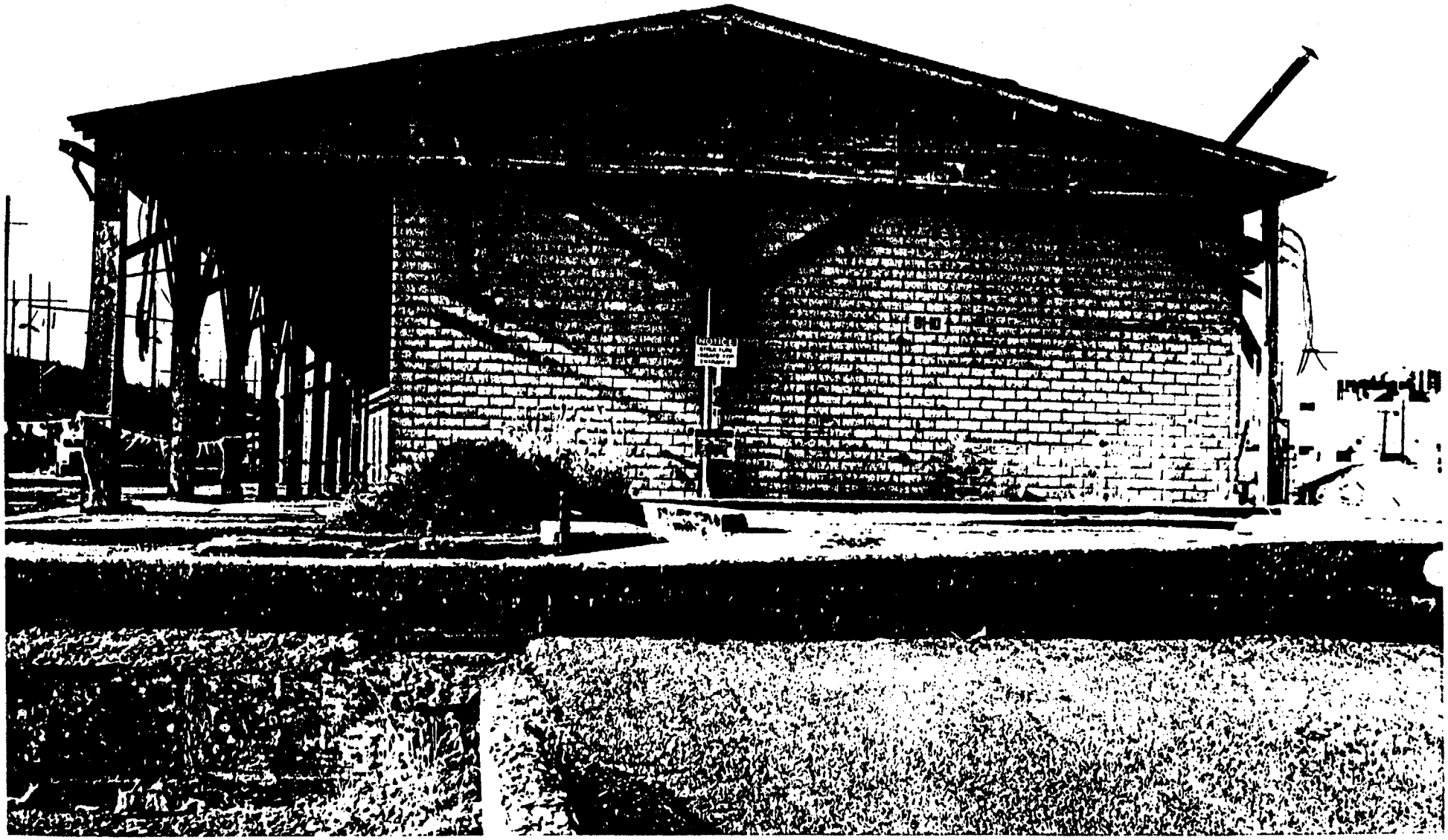


Fig. 8. View 6 - East facade of Building 81-10.

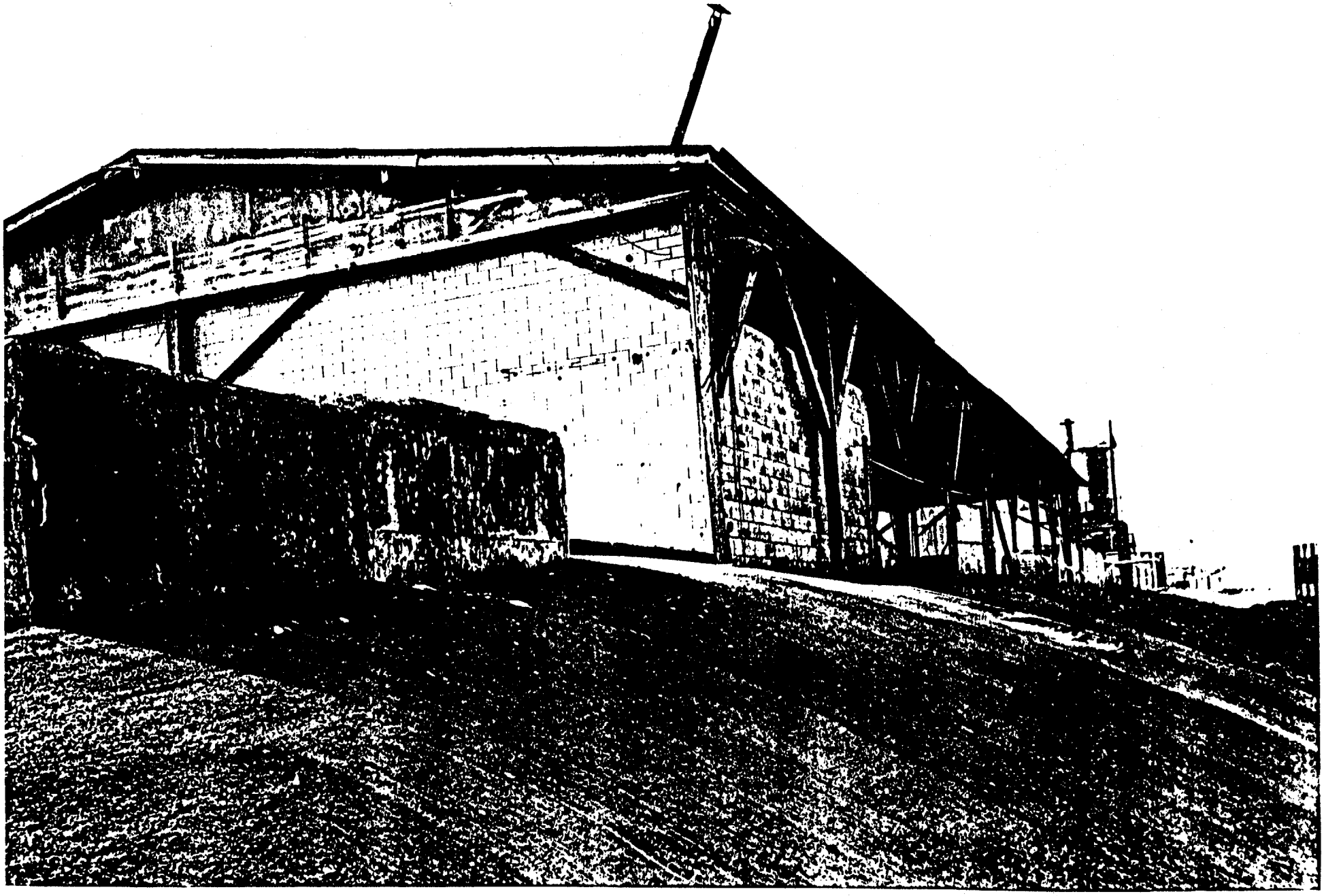
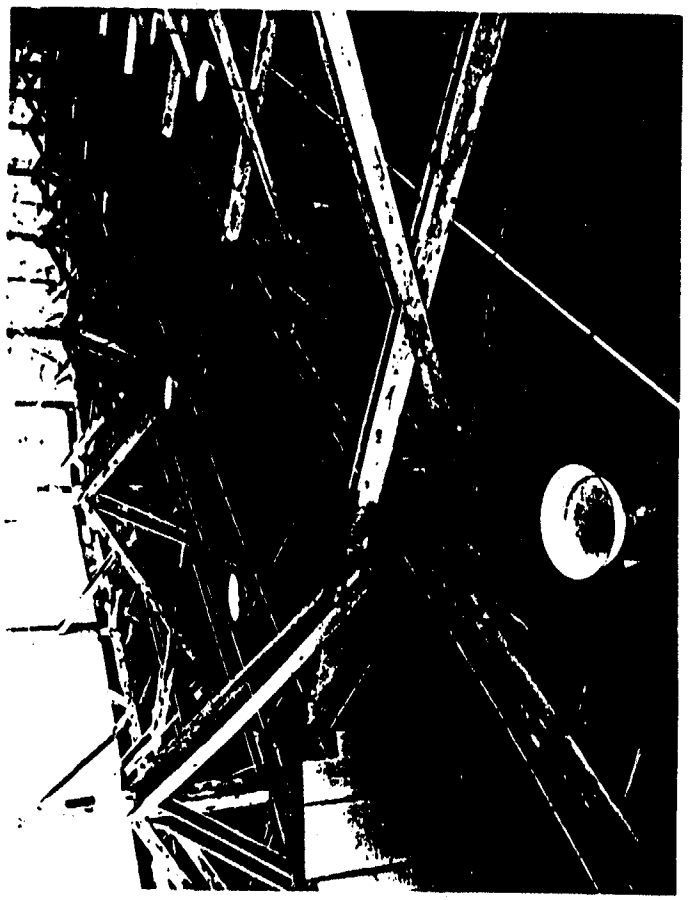


Fig. 7. View 5 – Northeast corner of Building 81-10.

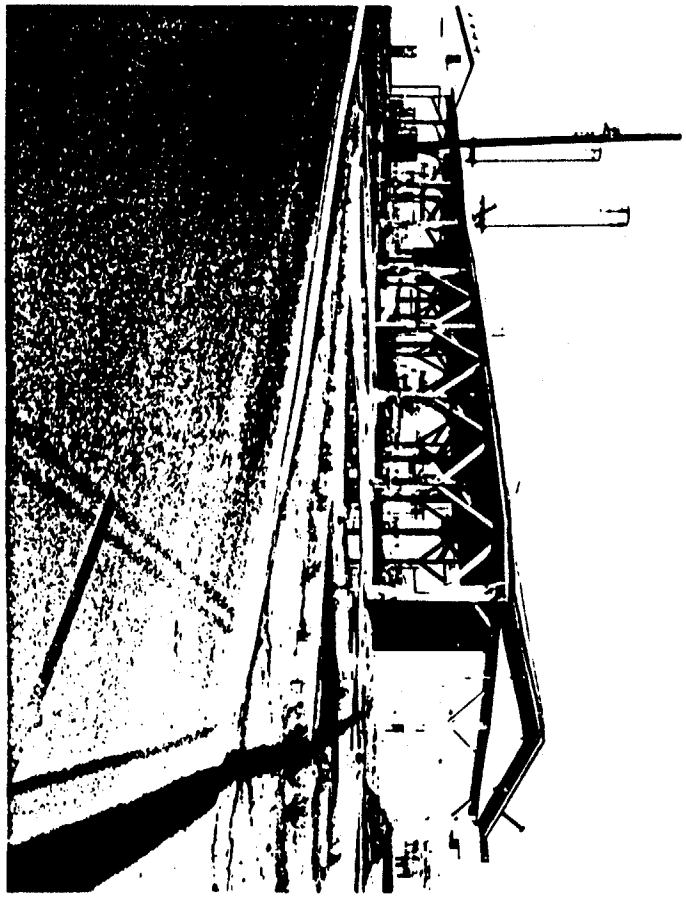
Building 81-10 Demolition, Y-12 Plant

Interior view of rafter and roof support structures in Building 81-10.



Building 81-10 Demolition, Y-12 Plant

Southeast corner of Building 81-10.



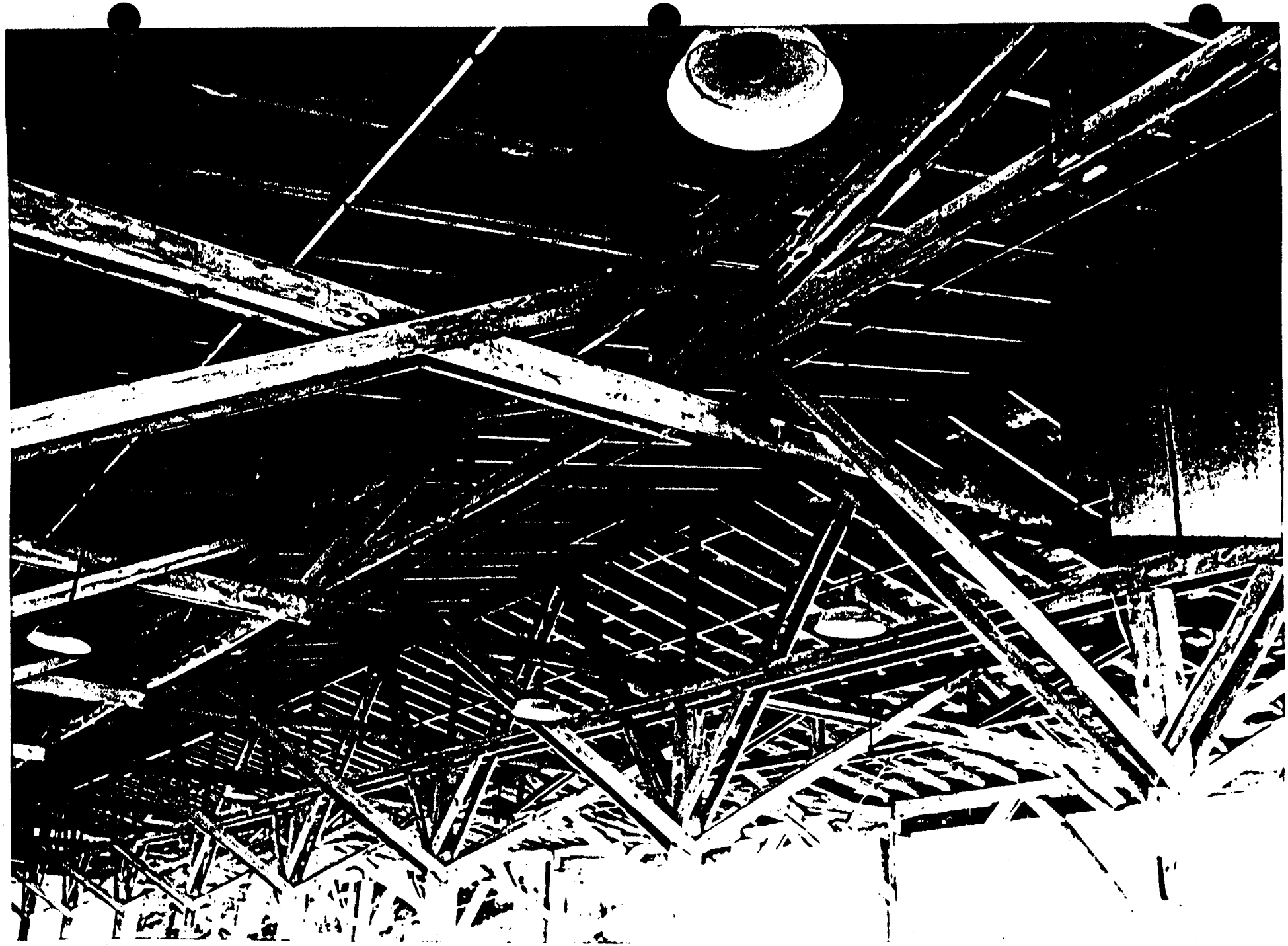
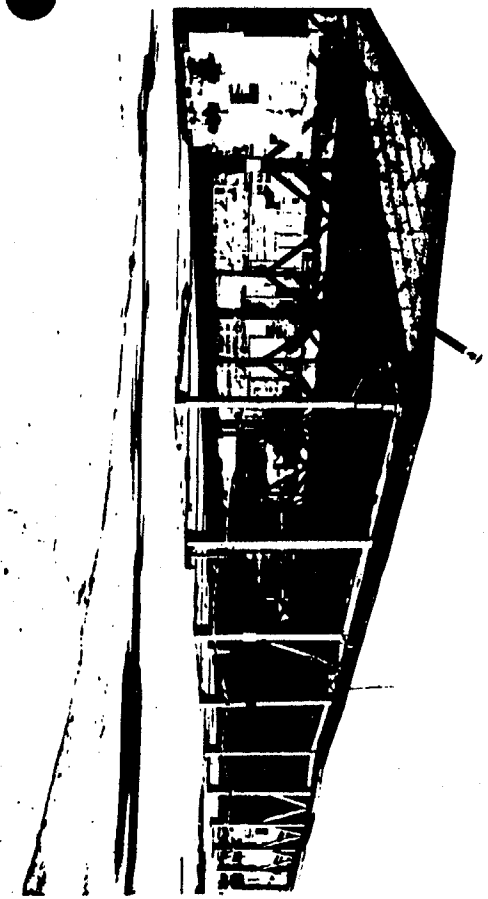


Fig. 9. View 7 – Interior. Rafter and support structure configuration of the Building 81-10 roof.



Building 81-10 Demolition, Y-12 Plant

Southwest corner of Building 81-10.

Building 81-10 Demolition, Y-12 Plant

South facade of Building 81-10. Notice the sway in the roof line near the center of the photograph.

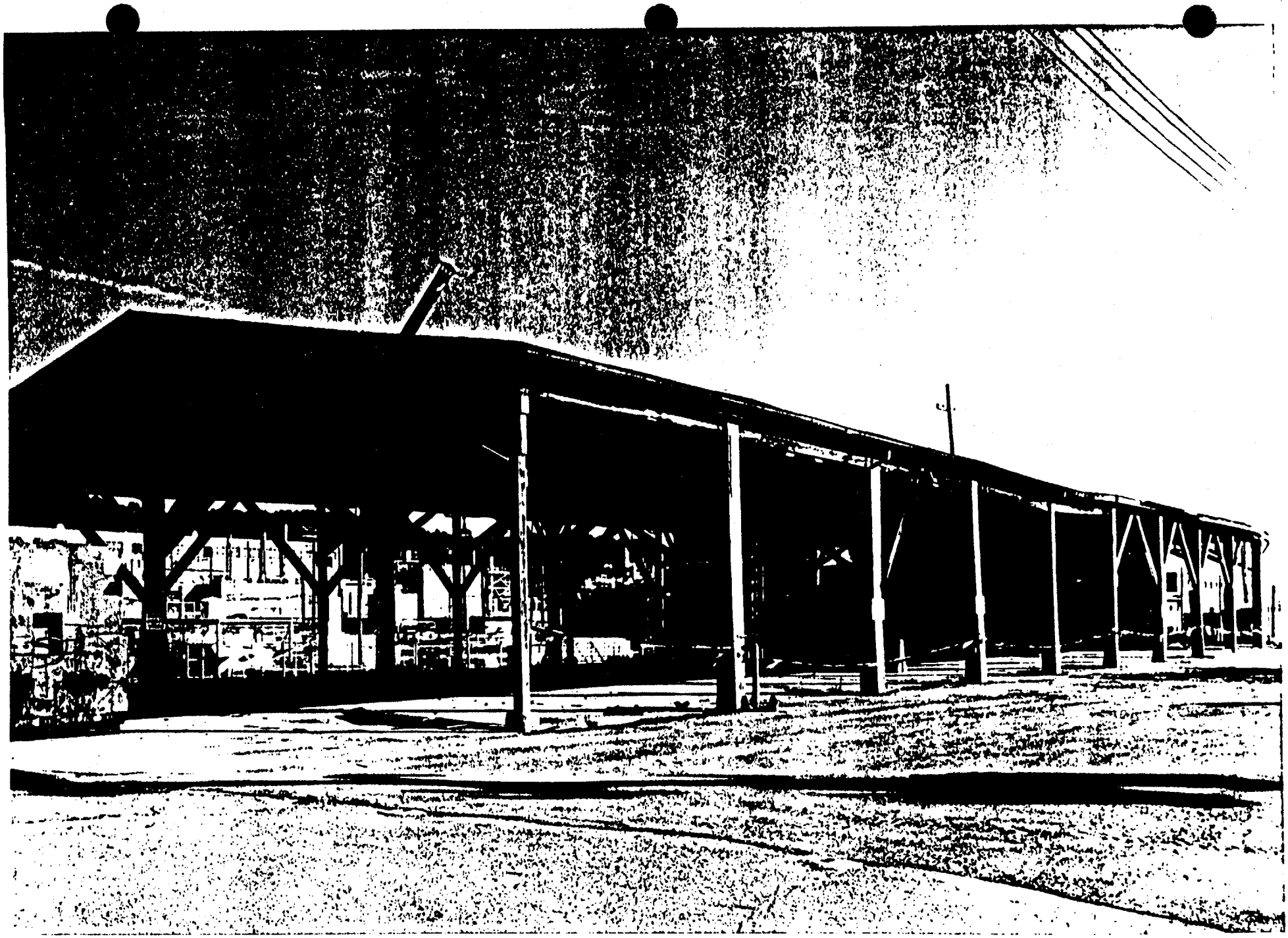


Fig. 5. View 3 – Southwest corner of Building 81-10.

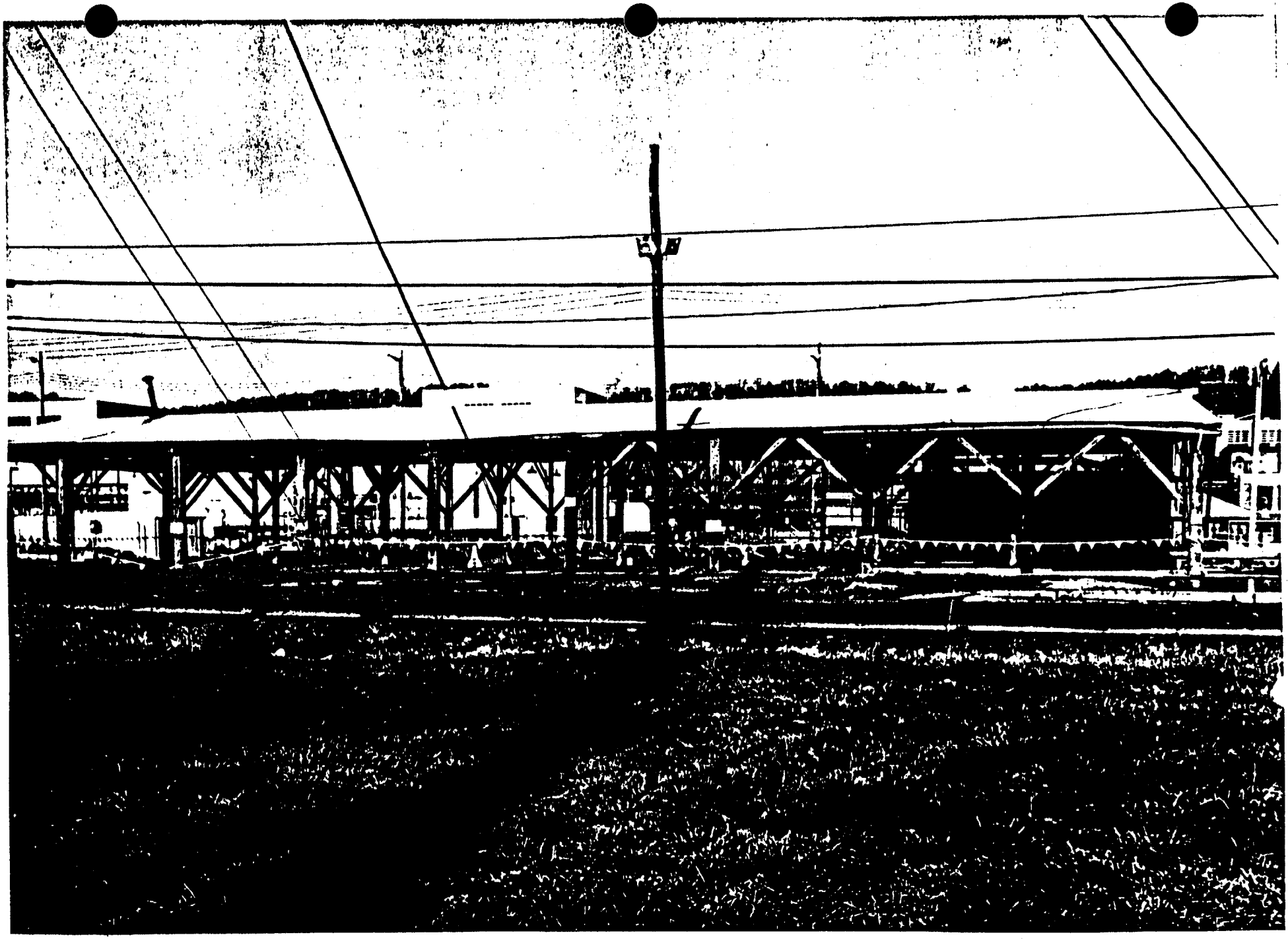
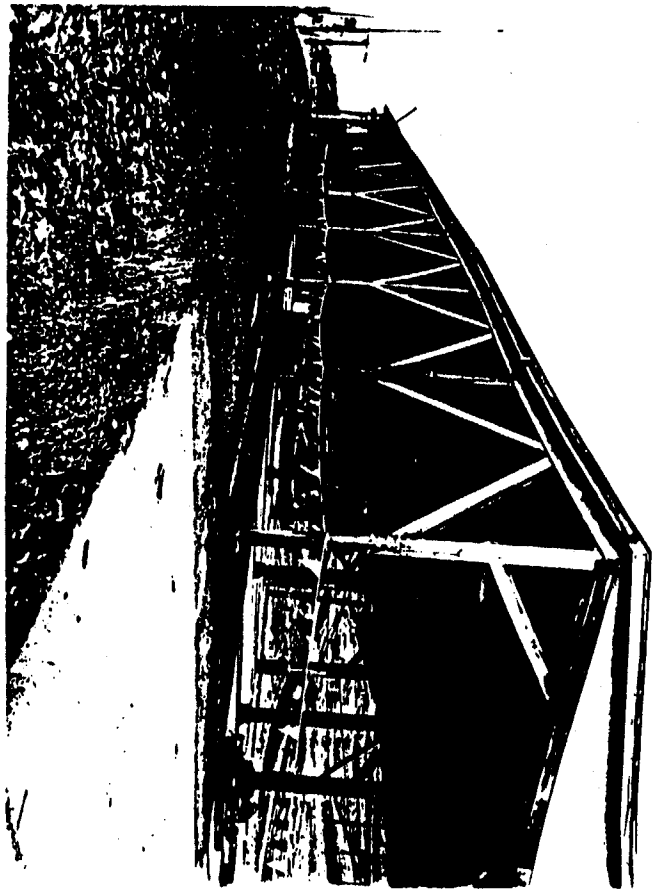


Fig. 4. View 2 – South facade of Building 81-10. Notice the sway in the roof line near the center of the photograph.

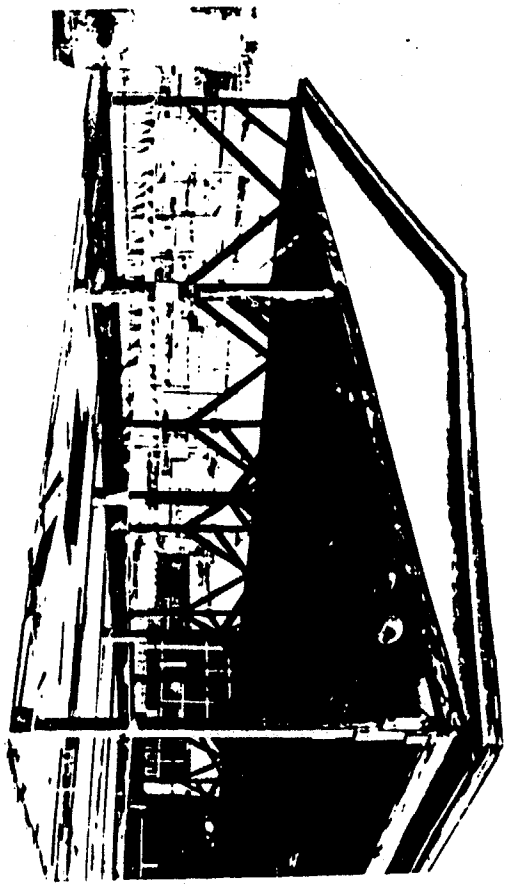
Building 81-10 Demolition, Y-12 Plant

Northwest corner of Building 81-10.



Building 81-10 Demolition, Y-12 Plant

Southwest corner of Building 81-10.



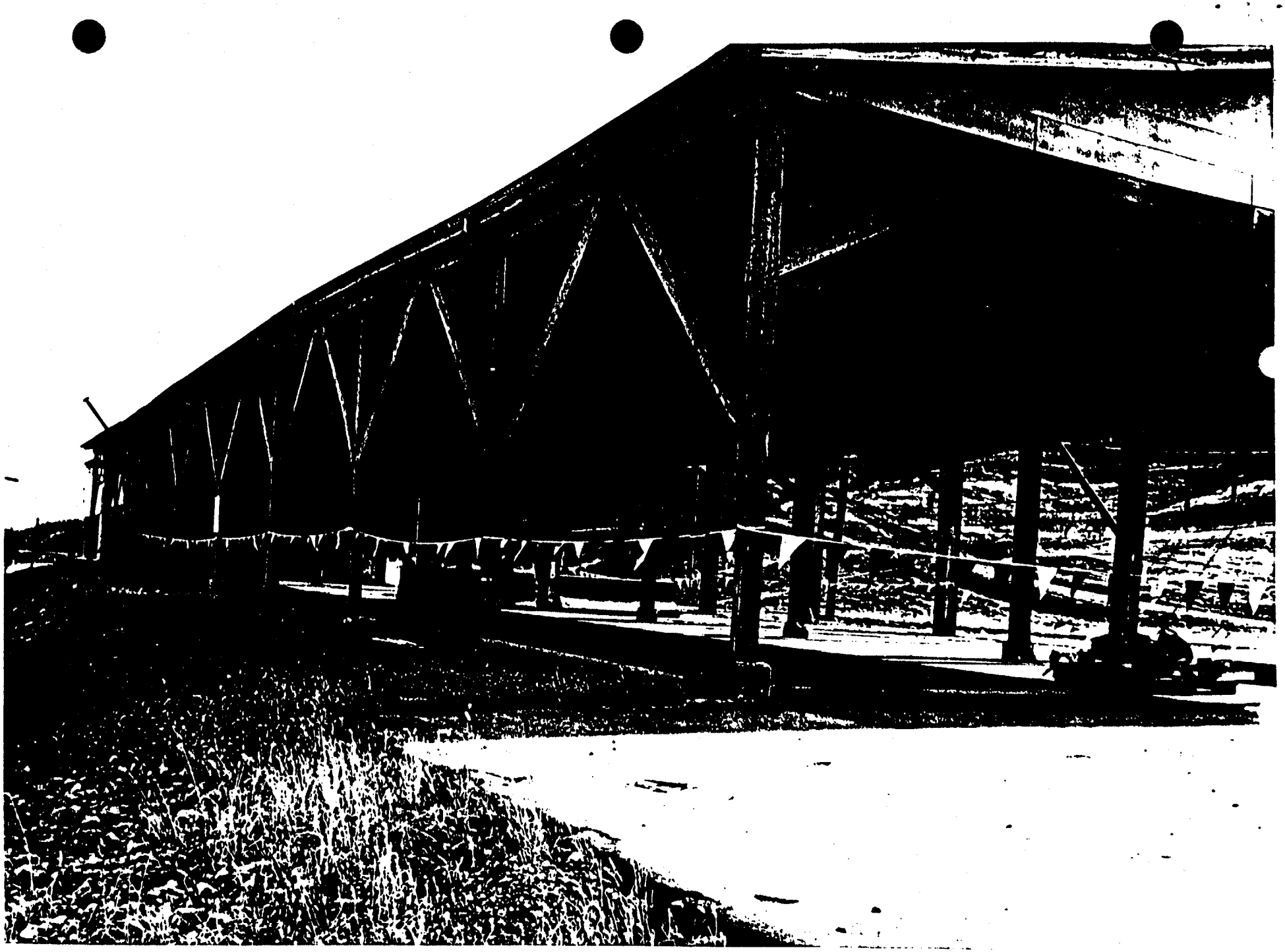


Fig. 6. View 4 – Northwest corner of Building 81-10.

UCN-7721 8
(2 1-86)

OAK RIDGE Y-12 PLANT INFORMATION CONTROL FORM

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Technical Information Office 2/22/96
Date

Conditions/Remarks:

(3/57 to 7/62) ?

81-10 pulled

M-[redacted] Dec 61 gone → 11-57 too

Y/HG-0005 4/57 - 5/62 more typed log sheets - incompl.

0007 MCT sev. ejecting. letters

p. 2, 7, 8 no 1-61 has 5, 6, 7-61

0016 ~~KT542~~ (Same as 0005) more handwritten

0023 1/58 to 10/62

0057/1,2,3,4,5,28 1971-82 IH Field Rpts α-4 stripping 1980 (IH)

✱ 0169

31 locations

0172 readings, ~~but incomplete dates~~ 1959, monthly skts not many > 1 or 2 x MAC

~~0174~~ reduction in sampling, air moth. comparison

5, 7, 9, 32, ~~459~~ process filter sludge

~~0215/2~~ 1971-73 90 Hg in various wastes. monthly stripping orders

(M-810) 0413, ~~0414~~ 8-53 "1009 lb. solvent" recovered β-4 "ALLOY" RECOVERY

(M-810) ~~0418~~ β-4 7-53 7-53 8/54

(M-810) 0440, ~~0441~~, ~~0442~~ β-4 all alloy recovery

have ~~0499~~

→ [M-65, M-68] 80, M-810, 836

0050 EMCR?

0526 α-5 vent drawings

0528 dates?

0503 α5 corresp.

0038

~~Y/HG-440~~ ~~water~~

Y/HG-0059 ~~furnace~~ ~~sludge~~

(1959-65, esp. 1962)

α-5 shutdown ← 3-13 →

0006

0024

0051

0070

0160

0181

0194

0246

0271

0274

4Q62

α-4 shutdown

0024

0053 air

0275

0276

0277

0482 dates

From, Y/EX-21 request pgs. 243, 244 to be sanitized

x20

ACCUMULATIVE SUMMARY OF SOLVENT RECOVERY FACILITY

1957	Days Operated	Drums Processed Current Month	Drums Processed To Date	Pounds Decanted Current Month	Pounds Decanted To Date	Pounds Condensed Current Month	Pounds Condensed To Date	Pounds To Alpha-4 Cascades Current Month	Pounds To Alpha-4 Cascades To Date	Pounds To Alpha-5 Cascades Current Month	Pounds To Alpha-5 Cascades To Date	Total Pounds Reclaimed Current Month	Total Pounds Reclaimed To Date	Operating Cost Current Month	Total Operating Cost To Date	Unit Cost Per Pound Current Month	
April	13	53	53	31,151	31,151	4,204	4,204	35,355	35,355	-0-	-0-	35,355	35,355	6,475	6,475	.183	
May	18	139	192	67,905	99,056	19,982	24,186	87,887	123,242	-0-	-0-	87,887	123,242	15,568	22,043	.177	
June	26	198	390	36,415	135,471	56,343	80,529	92,758	216,000	-0-	-0-	92,758	216,000	13,019	35,062	.140	
July	29	178	568	15,094	150,565	60,452	140,981	75,546	291,546	-0-	-0-	75,546	291,546	12,268	47,330	.162	
August	30	325	893	10,770	161,335	30,141	171,122	40,911	332,457	-0-	-0-	40,911	332,457	15,086	62,416	.369	
September	27	288	1,181	19,406	180,741	48,527	219,649	67,933	400,390	-0-	-0-	67,933	400,390	18,839	81,255	.277	
October	30	453	1,634	14,963	195,704	73,595	293,244	88,558	488,948	-0-	-0-	88,858	488,948	21,901	103,156	.247	
November	29	417	2,051	52,494	248,198	65,483	358,727	76,368	565,316	41,609	41,609	117,977	606,925	14,369	117,525	.122	
December	21	349	2,400	16,266	264,464	36,008	394,735	52,274	617,590	-0-		52,274	659,199	14,433	131,958	.276	
1958																	
January	26	416	2,816	4,763	269,227	54,801	449,536	-0-	617,590	59,564	101,173	59,564	718,763	12,265	144,223	.206	
February	24	327	3,143	2,502	271,729	45,523	495,059	12,461	630,051	35,564	136,737	48,025	766,788	8,642	152,865	.180	
March	31	433	3,576	13,248	285,077	59,717	554,776	-0-	630,051	73,065	209,802	73,065	839,853	13,293	166,858	.182	
April	30	425	4,001	19,797	304,874	58,770	613,546	-0-	630,052	78,567	288,369	78,567	918,420	13,094	179,252	.167	
May	28	253	4,254	17,816	322,690	52,747	666,293	60,463	690,571	10,103	298,472	70,563	988,983	11,732	190,984	.166	
June	-0-	-0-	4,254	1,053	323,743	-0-	666,293	1,053	691,564	-0-	298,472	1,053	990,036	8,259	199,243	7.843	
July	21	335	4,589	14,921	338,664	65,959	732,252	80,880	772,444	-0-	298,472	80,880	1,070,916	15,376	214,619	.190	
August	31	478	5,067	17,743	356,407	71,727	803,979	5,074	777,518	89,396	382,868	89,470	1,160,386	24,132	238,751	.270	
September	28	592	5,659	37,991	394,398	82,251	886,230	99,979	877,497	20269	403,137	120248	1,280,634	18,939	257,690	.157	
October	29	664	6,323	176,533	570,931	67,396	953,632	4,879	882,376	239,050	642,187	243,929	1,524,563	16,729	274,419	.069	
November	30	737	7,060	115,306	686,237	92,869	1,046,501	185,622	1,070,998	19,553	661,740	208,175	1,732,738	16,202	290,621	.078	
December	31	475	7,535	67,612	753,849	48,583	1,095,084	32,750	1,103,748	83,445	745,185	116,195	1,848,933	15,211	305,832	.131	.165

CUMULATIVE SUMMARY OF SOLVENT RECOVERY FACILITY

1957	Days Operated	Drums Processed Current Month	Drums Processed To Date	Pounds Decanted Current Month	Pounds Decanted To Date	Pounds Condensed Current Month	Pounds Condensed To Date	Pounds To Alpha-4 Cascades Current Month	Pounds To Alpha-4 Cascades To Date	Pounds To Alpha-5 Cascades Current Month	Pounds To Alpha-5 Cascades To Date	Total Pounds Reclaimed Current Month	Total Pounds Reclaimed To Date	Operating Cost Current Month	Total Operating Cost To Date	Unit Cost Per Pound Current Month	Unit Cost Per Pound To Date
April	13	53	53	31,151	31,151	4,204	4,204	35,355	35,355	-0-	-0-	35,355	35,355	6,475	6,475	.183	.183
May	18	139	192	67,905	99,056	19,982	24,186	87,887	123,242	-0-	-0-	87,887	123,242	15,568	22,043	.177	.179
June	26	198	390	36,415	135,471	56,343	80,529	92,758	216,000	-0-	-0-	92,758	216,000	13,019	35,062	.140	.162
July	29	178	568	15,094	150,565	60,452	140,981	75,546	291,546	-0-	-0-	75,546	291,546	12,268	47,330	.162	.162
August	30	325	893	10,770	161,335	30,141	171,122	40,911	327,457	-0-	-0-	40,911	322,457	15,086	62,416	.369	.194
September	27	288	1,181	19,406	180,741	48,527	219,649	67,933	400,390	-0-	-0-	67,933	400,390	18,839	81,255	.277	.203
October	30	453	1,634	14,963	195,704	73,595	293,244	88,558	488,948	-0-	-0-	88,858	488,948	21,901	103,156	.247	.211
November	29	417	2,051	52,494	248,198	65,483	358,727	76,368	565,316	41,609	41,609	177,977	606,929	14,369	117,525	.122	.193
December	21	349	2,400	16,266	264,464	36,008	394,735	52,274	617,590	-0-	41,609	52,274	659,199	14,433	131,958	.276	.200
1958																	
January	26	416	2,186	4,763	269,227	54,801	449,536	-0-	617,590	59,564	101,173	59,564	718,763	12,265	144,223	.206	.206
February	24	327	3,143	2,502	271,729	45,523	495,059	12,461	630,051	35,554	136,737	48,025	766,788	8,642	152,865	.180	.194
March	31	433	3,576	13,348	285,077	59,717	554,776	-0-	630,051	73,065	209,802	73,065	839,853	13,293	166,858	.182	.189
April	30	425	4,001	19,797	304,874	58,770	613,546	-0-	630,051	78,567	288,369	78,567	918,420	13,094	179,252	.167	.182
May	22	253	4,254	17,816	322,690	52,747	666,293	60,460	690,511	10,103	298,472	70,563	988,983	11,732	190,984	.166	.179
June	-0-	-0-	4,254	1,053	323,743	-0-	666,293	1,053	691,564	-0-	298,472	1,053	990,036	8,259	199,243	7.843	.203
July	21	335	4,589	14,921	338,664	65,959	732,252	80,880	772,444	-0-	298,472	80,880	1,070,916	15,376	214,619	.190	.200
August	31	478	5,067	17,743	356,407	71,727	803,979	5,074	777,518	84,396	382,868	89,470	1,160,386	24,132	238,751	.270	.213
September	28	592	5,659	37,991	394,398	82,257	886,236	99,979	877,497	20,269	403,137	120,248	1,280,634	18,939	257,690	.157	.201
October	29	664	6,323	176,933	570,931	67,396	953,632	+579	882,376	239,50	642,187	243929	1,524,563	16,729	274,419	.069	
November	30	737	7,060	115,306	686,237	92,869	1046,501	188,622	1,070,998	19,553	661,740	208 75	1,732,738	16,202	290,621	.078	
December												116 95					

	Days Operated	Drums Processed Current Month	Drums Processed To Date	Pounds Decanted Current Month	Pounds Decanted To Date	Pounds Condensed Current Month	Pounds Condensed To Date	Pounds To Alpha-4 Cascades Current Month	Pounds To Alpha-4 Cascades To Date	Pounds To Alpha-5 Cascades Current Month	Pounds to Alpha-5 Cascades To Date	Total Pounds Reclaimed Current Month	Total Pounds Reclaimed To Date	Operating Cost Current Month	Total Operating Cost To Date	Unit Cost Per Pound Current Month
1961																
January	28	177		21,377		7,358		0		28,735		28,735		4788		.167
February																
March	31	273		32,493		21,912		0		54,405		54,405		6295		.116
April	30	329		33,930		35,089		0		67,019		67,019		6104		.091
May	0	0		0		0		0		0		0		878		
June	0	0		0		0		0		0		0		2,645		
July	0	0		0		0		0		0		0		332		
August																
September																
October																
November																
December																
1962																
January	20	102		6314		22,744						29,058		8145		.280
February	28	318		43,313		32,619						75,931		7,454		.098
March	30	249		43,003		39,505						82,508		11,074		.134
April	30	171		24,977		12,762						37,739		8995		.238
May	12	72		8,580		7,615						16,195		4,860		.300
June	0	0		0		0						0		1,709		
July	0	0		0		0						0	3559,760	982		
August																
September																
October																
November																
December																

ACCOUNT 2686-100 - SOLVENT BOTTLING

	Jan. '60	Feb. '60	June '60	Dec. '60	Jan. '61	Feb. '61	Mar. '61	April '61	May '61	June '61
Pounds Bottled This Month	22,800	92,720	0	98,800	710,600	647,900	891,100	893,000	444,600	0
Number of Bottles (76#)	300	1,220	0	1,300	9,350	8,525	11,725	11,750	5,850	0
Number of Pallets (25 Bottles)	12	* 48.8	0	52	374	341	469	470	234	0
Total Cost This Month ($)	2,579	1,836	346	1,796	9,861	11,407	10,134	10,988	4,847	80
Cost Per Pound This Month ($)	.113	.020	-	.018	.014	.018	.011	.012	.011	-
Pounds Bottled to Date	22,800	115,520	115,520	214,320	924,920	1,572,820	2,463,920	3,356,920	3,801,520	3,801,520
Total Bottles to Date	300	1,520	1,520	2,820	12,170	20,695	32,420	44,170	50,020	50,020
Total Cost to Date ($)	2,579	4,415	4,761	6,557	16,418	27,825	37,959	48,947	53,794	53,874
Cost Per Pound to Date ($)	.113	.038	.041	.031	.018	.018	.015	.015	.014	.014
Cost Per Bottle to Date ($)	8.60	2.90	3.13	2.33	1.35	1.34	1.171	1.108	1.075	1.077

* A total of 20 bottles (1520 lbs) was shipped to The Bureau of Standards -- 13 bottles on March 18, 1960, and 7 bottles on June 15, 1960.

For P.I.C Panel

Get all available flasks 1 year life expectancy

New flask cost $9

19359 bottles To GSA in Box Pallets (36 Sk

Order Flasks
Pallets
Tags

GSA 56
25 bottles

APRIL 1957

Account 2686
(Solvent Recovery Facility)

Y/HG-0005

	Amount	Unit Cost
TOTAL LABOR	2,923	.083
Direct	708	.020
1-2-9	730	.021
4-6-7-10-14	1,485	.042
TOTAL MATERIAL	243	.007
Direct	-0-	-0-
1-2-9	180	.005
3-4-5-6-8-13-50	63	.002
TOTAL LABOR & MATERIAL	3,166	.090
APE	3,296	.093
TOTAL WORKED MATERIAL (Natural Gas)	13	.0003
TOTAL COST	6,475	.183
TOTAL SOLVENT RECLAIMED (Lbs.)	35,355✓	

This process was in operation 13 days during the month. 53 drums were processed. Of the total amount reclaimed, 31,151 lbs. were separated physically and 4,204 4,024 lbs. by condensation. The total production was transferred to Alpha-4 Cascades.

MAY 1957

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,873	.078
Direct	2,571	.029
1-2-9	2,708	.031
4-6-7-10-14	1,594	.018
TOTAL MATERIAL	1,518	.017
Direct	64	.001
1-2-9	1,075	.012
3-4-5-6-8-13-50	379	.004
TOTAL LABOR & MATERIAL	8,391	.095
APE	7,155	.081
TOTAL WORKED MATERIAL (Natural Gas)	22	.001
TOTAL COST	15,568	.177
TOTAL SOLVENT RECLAIMED (Lbs.)	87,887	

This process was in operation 18 days during the month. 139 drums were processed. 10%
Of the total amount reclaimed, 67,905 lbs. 77%
were separated physically and 19,982 lbs. 23%
by condensation. The total production was transferred to Alpha-4 Cascades.

JUNE 1957

Account 2686
(Solvent Recovery Facility)

	Account	Unit Cost
TOTAL LABOR	5,473	.059
Direct	2,052	.022
1-2-9	1,702	.018
4-6-7-10-14	1,719	.019
TOTAL MATERIAL	1,349	.015
Direct	-0-	-0-
1-2-9	890	.010
3-4-5-6-8-13-50	459	.005
TOTAL LABOR & MATERIAL	6,822	.074
APE	6,155	.070
TOTAL WORKED MATERIAL (Natural Gas)	42	.004
TOTAL COST	13,019	.144
TOTAL SOLVENT RECLAIMED (Lbs.)	92,758	

This process was in operation approximately 26 days during the month. 198 drums were processed. Of the total amount reclaimed, 36,415 lbs. were separated physically and 56,343 lbs. by condensation. The total production was transferred to Alpha-4 Cascades. 75%

JULY 1957

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,036	.080
Direct	2,069	.027
1-2-9	2,392	.032
4-6-7-10-14	1,575	.021
TOTAL MATERIAL	772	.010
Direct	-0-	-0-
1-2-9	504	.007
3-4-5-6-8-13-50	268	.004
TOTAL LABOR & MATERIAL	6,808	.090
APE	5,395	.071
TOTAL WORKED MATERIAL (Natural Gas)	65	.001
TOTAL COST	12,268	.162
TOTAL SOLVENT RECLAIMED (Lbs.)	75,546	

This process was in operation 29 days during the month. 178 drums were processed. Of the total amount reclaimed, 15,094 lbs. were separated physically and 60,452 lbs. by condensation. The total production was transferred to Alpha-4 Cascades. 6.8%

AUGUST 1957

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	7,111	.17
Direct	3,266	.08
1-2-9	2,193	.05
4-6-7-10-14	1,652	.04
TOTAL MATERIAL	1,191	.03
Direct	-0-	-0-
1-2-9	670	.02
3-4-5-6-8-13-50	521	.01
TOTAL LABOR & MATERIAL	8,302	.20
APE	6,738	.16
TOTAL WORKED MATERIAL (Natural Gas)	46	.01
TOTAL COST	15,086	.37
TOTAL SOLVENT RECLAIMED (Lbs.)	40,911	

This process was in operation 30 days during the month. 325 Drums were processed. Of the total amount reclaimed, 10,770 lbs. were separated physically and 30,141 lbs. by condensation. The total production was transferred to Alpha-4 Cascades. 28

SEPTEMBER 1957

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	8,935	.132
Direct	4,066	.060
1-2-9	2,472	.036
4-6-7-10-14	2,397	.035
TOTAL MATERIAL	1,835	.027
Direct	-0-	-0-
1-2-9	930	.014
3-4-5-6-8-13-50	905	.013
TOTAL LABOR & MATERIAL	10,770	.159
APE	7,936	.117
TOTAL WORKED MATERIAL (Natural Gas)	41	.0006
FROM 2620	92	.001
TOTAL COST	18,839	.277
TOTAL SOLVENT RECLAIMED (Lbs.)	67,933	

This process was in operation 27 days during the month. 288 drums were processed. Of the total production, 19,406 lbs. were separated physically and 48,527 lbs. by condensation. The total production was transferred to Alpha-4 Cascades. 3.8%

OCTOBER 1957

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	10,304	.12
Direct	4,332	.05
1-2-9	2,382	.03
4-6-7-10-14	3,590	.04
TOTAL MATERIAL	1,957	.02
Direct	-0-	-0-
1-2-9	796	.009
3-4-5-6-8-13-50	1,161	.01
TOTAL LABOR & MATERIAL	12,261	.14
APE	9,573	.11
TOTAL WORKED MATERIAL (Natural Gas)	48	.005
FROM 2620	19	.002
TOTAL COST	21,901	.25
TOTAL SOLVENT RECLAIMED (Lbs.)	88,558	

This process was in operation 30 days during the month. 453 drums were processed. Of the total amount reclaimed, 14963 lbs. were separated physically and 73,595 lbs. by condensation. The total production was transferred to Alpha-4 Cascades. 3%

DECEMBER 1957

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	7,095	.14
Direct	3,462	.07
1-2-9	2,236	.04
4-6-7-10-14	1,397	.03
TOTAL MATERIAL	762	.01
Direct	-0-	-0-
1-2-9	557	.01
3-4-5-6-8-13-50	205	.004
TOTAL LABOR & MATERIAL	7,857	.15
APE	6,474	.123
TOTAL WORKED MATERIAL (Natural Gas)	92	.002
FROM 2620	10	.001
TOTAL COST	14,433	.276
TOTAL SOLVENT RECLAIMED (Lbs.)	52,274	

This process was in operation 21 days during the month. 349 drums were processed. Of the total amount reclaimed, 16,266 lbs. were separated physically and 36,008 lbs. were condensed. The total production was transferred to Alpha-4 Cascades.

JANUARY 1958

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,279	.105
Direct	3,588	.060
1-2-9	1,346	.023
4-6-7-10-14	1,345	.022
TOTAL MATERIAL	939	.016
Direct	1	-0-
1-2-9	635	.011
3-4-5-6-8-13-50	303	.005
TOTAL LABOR & MATERIAL	7,218	.121
APE	4,985	.084
TOTAL WORKED MATERIAL (Natural Gas)	62	.001
TOTAL COST	12,265	.206
TOTAL SOLVENT RECLAIMED (Lbs.)	59,564	

This process was in operation 26 days during the month. A total of 416 drums were processed. Of the total production, 54,801 lbs. were condensed and 4,763 lbs. were separated physically. The total production was transferred to Alpha-5 Cascades.

JANUARY 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,279	.105
Direct	3,588	.060
1-2-9	1,346	.023
4-6-7-10-11	1,345	.022
TOTAL MATERIAL	939	.016
Direct	1	-0-
1-2-9	635	.011
3-5-6-8-13-50	303	.005
TOTAL LABOR & MATERIAL	7,218	.121
APE	4,985	.084
TOTAL WORKED MATERIAL (Natural Gas)	62	.001
TOTAL COST	12,265	.206
TOTAL SOLVENT PRODUCED (Lbs.)	59,564	

26 days
416 drums

Condensed 54,801 lbs
Physical Separation 4,763
Total Production To A-5 (2683)

FEBRUARY 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	4,492	.09
Direct	3,235	.07
1-2-9	394	.008
4-6-7-10-14	863	.02
TOTAL MATERIAL		
Direct	-0-	-0-
1-2-9	342	.007
3-4-5-6-8-13-50	133	.003
TOTAL LABOR & MATERIAL	4,967	.10
APE	3,618	.08
TOTAL WORKED MATERIAL (Natural Gas)	57	.001
TOTAL COST	8,642	.18
TOTAL SOLVENT RECLAIMED (Lbs.)	48,025	

This process was in operation 24 days during the month. 327 drums were processed. Of the total amount reclaimed, 2,502 lbs. were separated physically and 45,523 lbs. were separated by condensation. 12,461 lbs. were transferred to Alpha-4 Cascades and 35,564 lbs. were transferred to Alpha-5 Cascades.

FEBRUARY 1958

Account 2686

(Solvent Recovery Facility)

		Amount	Unit Cost
TAL LABOR		4,492	.09
irect		3,235	.07
-2-9		394	.008
-6-7-10-11		863	.02
TAL MATERIAL		475	.01
irect		-0-	-0-
-2-9		342	.007
-4-5-6-8-13-50		133	.003
TAL LABOR & MATERIAL		4,967	.10
E		3,618	.08
TAL WORKED MATERIAL	(Natural Gas)	57	.001
TAL COST		8,642	.18
TAL SOLVENT PRODUCED	(Lbs.)	48,025	

24 days/
327 drums/
2,502 lbs Physical Separation
45,523 lbs Condensed

MARCH 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,136	.08
Direct	4,426	.06
1-2-9	982	.01
4-6-7-10-14	728	.01
TOTAL MATERIAL	2,302	.03
Direct	-0-	-0-
1-2-9	2,087	.03
3-4-5-6-8-13-50	215	.003
TOTAL LABOR & MATERIAL	8,438	.115
APE	4,813	.066
TOTAL WORKED MATERIAL (Natural Gas)	42	.0005
TOTAL COST	13,293	.182
TOTAL SOLVENT PRODUCED (Lbs.)	73,065	

This process was in operation 31 days during the month. A total of 483 drums were processed. Of the total amount reclaimed (73,065 lbs.), 59,717 lbs. were condensed and 13,348 lbs. were separated physically. The total production was transferred to Alpha-5 Cascades.

MARCH 1958

Account 2686
(Solvent Recovery Facility)

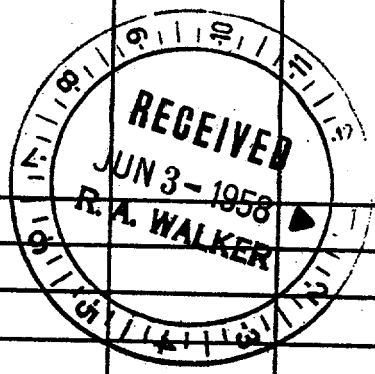
	Amount	Unit Cost
TOTAL LABOR	6,136	.08
Direct	4,426	.06
1-2-9	982	.01
4-6-7-10-14	728	.01
TOTAL MATERIAL	2,302	.03
Direct	-0-	-0-
1-2-9	2,087	.03
3-4-5-6-8-13-50	215	.003
TOTAL LABOR & MATERIAL	8,438	.115
APE	4,813	.066
TOTAL WORKED MATERIAL (Natural Gas)	42	.005
TOTAL COST	13,293	.182
TOTAL SOLVENT PRODUCED (Lbs.)	73,065	

This process was in operation 31 days during the month. A total of 433 drums were processed. Of the total (73,065 lbs.), 59,717 lbs. were condensed and 13,348 lbs. were separated physically.

Total Production transferred to alpha-5 (acct. 2683).

APRIL 1958

Account 2686
(Solvent Recovery Facility)



	Amount	Unit Cost
TOTAL LABOR	6,253	.080
Direct	4,173	.053
1-2-9	984	.013
4-6-7-10-14	1,096	.014
TOTAL MATERIAL	987	.013
Direct	-0-	-0-
1-2-9	755	.010
3-4-5-6-8-13-50	232	.003
TOTAL LABOR & MATERIAL	7,240	.092
APE	5,433	.070
TOTAL WORKED MATERIAL (Natural Gas)	421	.005
TOTAL COST	13,094	.167
TOTAL SOLVENT PRODUCED (Lbs.)	78,567	

This process was in operation 30 days during the month. 425 drums were processed. Of the total amount reclaimed, 58,770 lbs. were reclaimed by condensation and 19,797 by physical separation. The total production was transferred to Alpha-5.

Form

APRIL 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	6,253	.080
Direct	4,173	.053
1-2-9	984	.013
4-6-7-10-14	1,096	.014
TOTAL MATERIAL	987 -	.013
Direct	-0-	-0-
1-2-9	755	.010
3-4-5-6-8-13-50	232	.003
TOTAL LABOR & MATERIAL	7,240	.092
APE	5,433	.070
TOTAL WORKED MATERIAL (Natural GAS)	421	.005
TOTAL COST	13,094	.167
TOTAL SOLVENT PRODUCED (Lbs.)	78,567	

Corrected 78,567

Condensed 58,770

Physical 19,797

30 days
424.5 hours
Total a.h. Condensed
Transferred To A-5 (2683)

MAY 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	5,684	.081
Direct	2,469	.035
1-2-9	2,467	.035
4-6-7-10-14	748	.011
TOTAL MATERIAL	854	.012
Direct	-0-	-0-
1-2-9	612	.009
4-6-7-10-14	242	.003
TOTAL LABOR & MATERIAL	6,538	.093
APE	5,150	.073
TOTAL WORKED MATERIAL (Natural Gas)	44	.0006
TOTAL COST	11,732	.1663
TOTAL SOLVENT RECLAIMED (Lbs.)	70,563	

This process was in operation 22 days during the month. 253 drums were processed. Of the total amount reclaimed, 52,747 lbs. were separated by condensation and 17,816 lbs. were separated physically. 9,253 lbs. were transferred to Alpha-5 and 61,310 lbs. were transferred to Alpha-4.

MAY 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	5,684	.081
Direct	2,469	.035
1-2-9	2,467	.035
4-6-7-10-14	748	.011
TOTAL MATERIAL	854	.012
Direct	-0-	-0-
1-2-9	612	.009
3-4-5-6-8-13-50	242	.003
TOTAL LABOR & MATERIAL	6,538	.093
APE	5,150	.073
TOTAL WORKED MATERIAL (Natural Gas)	44	.0006
TOTAL COST	11,732	.1663
TOTAL SOLVENT RECLAIMED (Lbs.)	70,563	

Operated 22 days
253 drums/Hr.
52,747 lbs. Condensed
17,816 lbs. Physically separated

9,253 lbs. to A-5
61,310 lbs. to A-4

-885 (Jan'48) Y-12 DATA SHEET

JUNE 1958

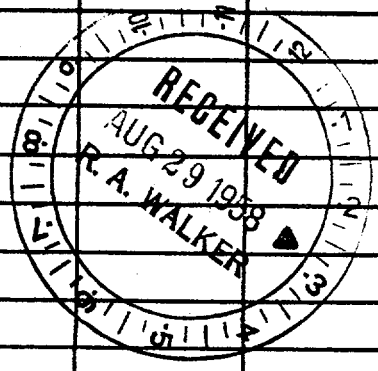
Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	3,643	3.460
Direct	283	.269
1-2-9	3,129	2.972
4-6-7-10-14	231	.219
TOTAL MATERIAL	1,860	1.776
Direct	-0-	-0-
1-2-9	1,785	1.695
3-4-5-6-8-13-50	75	.071
TOTAL LABOR & MATERIAL	5,503	5.226
APE	3,135	2.977
TOTAL WORKED MATERIAL (Natural Gas)	(379)	(.360)
TOTAL COST	8,259	7.843

TOTAL SOLVENT RECLAIMED (Lbs.)

Days Operated:	-0-
Drums Processed:	-0-
Lbs. Condensed:	-0-
Lbs. Decanted:	1,053
Lbs. To A-4 Cascades:	1,053
Lbs. To A-5 Cascades:	-0-



JUNE 1958

Account 2686
(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	3,643	3.460
Direct	283	.269
1-2-9	3,129	2.972
4-6-7-10-14	231	.219
TOTAL MATERIAL	1,860	1.766
Direct	-0-	-0-
1-2-9	1,785	1.695
3-4-5-6-8-13-50	75	.071
TOTAL LABOR & MATERIAL	5,503	5.226
APE	3,135	2.977
TOTAL WORKED MATERIAL (Natural Gas) -	(379)	(360)
TOTAL COST	8,259	7.843
TOTAL SOLVENT RECLAIMED (Lbs.)	1,053	

Days Operated:	-0-
Drums Processed:	-0-
Lbs. Condensed:	-0-
Lbs. Decanted	1,053
Lbs. To A-4 Cascades:	1,053
Lbs. To A-5 Cascades:	-0-

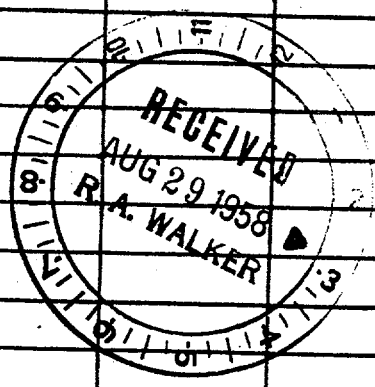
JULY 1958

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	7,608	.094
Direct	3,104	.038
1-2-9	3,601	.045
Other	903	.011
TOTAL MATERIAL	1,231	.015
Direct	-0-	-0-
1-2-9	1,093	.014
Other	138	.002
TOTAL LABOR & MATERIAL	8,839	.109
APE	6,478	.080
TOTAL WORKED MATERIAL (Natural Gas)	59	.001
TOTAL COST	15,376	.190
TOTAL SOLVENT RECLAIMED (Lbs.)	80,880	

Days Operated:	21
Drums Processed:	335
Lbs. Condensed:	65,959
Lbs. Decanted:	14,921
Lbs. To A-4 Cascades:	80,880
Lbs. To A-5 Cascades:	-0-



JULY 1958

Account 2686

(Solvent Recovery Facility)

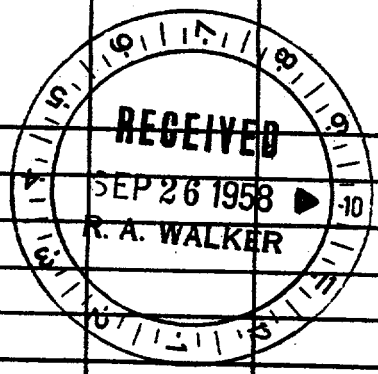
	Amount	Unit Cost
TOTAL LABOR	7,608	.094
Direct	3,104	.038
1-2-9	3,601	.045
Other	903	.011
TOTAL MATERIAL	1,231	.015
Direct	-0-	-0-
1-2-9	1,093	.014
Other	138	.002
TOTAL LABOR & MATERIAL	8,839	.109
APE	6,478	.080
TOTAL WORKED MATERIAL (Natural Gas)	59	.001
TOTAL COST	15,376	.190
TOTAL SOLVENT RECLAIMED (Lbs.)	80,880	

Days Operated:	21
Drums processed:	335
Lbs. Condensed:	65,959
Lbs. Decanted:	14,921
Lbs. To A-4 Cascades:	80,880
Lbs. To A-5 Cascades:	-0-

AUGUST 1958

Account 2686

(Solvent Recovery Facility)



	Amount	Unit Cost
TOTAL LABOR	11,012	.123
Direct	4,058	.045
1-2-9	5,571	.062
Other	1,383	.015
TOTAL MATERIAL	2,836	.032
Direct	-0-	-0-
1-2-9	2,425	.027
Other	411	.005
TOTAL LABOR & MATERIAL	13,848	.155
APE	10,202	.114
TOTAL WORKED MATERIAL (Natural Gas)	82	.001
TOTAL COST	24,132	.270
TOTAL SOLVENT RECLAIMED (Lbs.)	89,470	

Days Operated:	31
Drums Processed:	478
Lbs. Condensed:	71,727
Lbs. Decanted:	17,743
Lbs. To A-4 Cascades:	5,074
Lbs. To A-5 Cascades:	84,396

AUGUST 1958

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	11,012	.123
Direct	4,058	.045
1-2-9	5,571	.062
Other	1,383	.015
TOTAL MATERIAL	2,836	.032
Direct	-0-	-0-
1-2-9	2,425	.027
Other	411	.005
TOTAL LABOR & MATERIAL	13,848	.155
APE	10,202	.114
TOTAL WORKED MATERIAL (Natural Gas)	82	.001
TOTAL COST	24,132	.270
TOTAL SOLVENT RECLAIMED (Lbs.)	89,470	

Days Operated:	31
Drums Processed:	478
Lbs. Condensed:	71,727
Lbs. Decanted:	17,743
Lbs. To A-4 Cascades:	5,074
Lbs. To A-5 Cascades:	54,396

SEPTEMBER 1958

Account 2686

(Solvent Recovery Facility)

	Amount	Unit Cost
TOTAL LABOR	8,516	.071
Direct	4,281	.036
1-2-9	3,508	.029
Other	727	.006
TOTAL MATERIAL	2,658	.022
Direct	-0-	-0-
1-2-9	2,283	.019
Other	375	.003
TOTAL LABOR & MATERIAL	11,174	.093
APE	7,573	.063
TOTAL WORKED MATERIAL (Natural Gas)	74	.0006
SPECIAL SERVICES (2791)	118	.001
TOTAL COST	18,939	.157
TOTAL SOLVENT RECLAIMED (Lbs.)	120,248	

Days Operated:	28
Drums Processed:	592
Lbs. Condensed:	82,257
Lbs. Decanted:	37,991
Lbs. To A-4 Cascades:	99,979
Lbs. To A-5 Cascades:	20,269

SEPTEMBER 1958

Account 2686
(Solvent Recovery Facility)

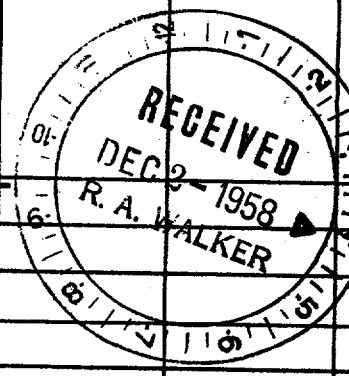
	Amount	Unit Cost
TOTAL LABOR	8,516	.071
Direct	4,281	.036
1-2-9	3,508	.029
Other	727	.006
TOTAL MATERIAL	2,658	.022
Direct	-0-	-0-
1-2-9	2,283	.019
Other	375	.003
TOTAL LABOR & MATERIAL	11,174	.093
APE	7,573	.063
TOTAL WORKED MATERIAL (Natural Gas)	74	.0006
Special Services (2791)	118	.001
TOTAL COST	18,939	.157
TOTAL SOLVENT RECLAIMED (Lbs.)	120,248	1.008

Days Operated:	28
Drums Processed:	592
Lbs. Condensed:	82,257
Lbs. Decanted:	37,991
Lbs. To A-4 Cascades:	99,979
Lbs. To A-5 Cascades:	20,269

OCTOBER 1958

Account 2686

(Solvent Recovery Facility)



	Amount	Unit Cost
TOTAL LABOR	7,313	.030
Direct	4,227	.017
1-2-9	2,250	.009
Other	836	.003
TOTAL MATERIAL	2,742	.011
Direct	-0-	-0-
1-2-9	2,504	.010
Other	238	.001
TOTAL LABOR & MATERIAL	10,055	.041
APE	6,523	.027
TOTAL WORKED MATERIAL	151	.0006
Natural Gas	82	.0003
Special Services (2791)	69	.0002
TOTAL COST	16,729	.069
TOTAL SOLVENT RECLAIMED (lbs)	243,929	

Days Operated:	29	
Drums Processed:	664	6%
Lbs. Condensed:	67,396	
Lbs. Decanted:	176,533	
Lbs. to A-4 Cascades:	4,879	
Lbs. to A-5 Cascades:	239,050	

OCTOBER 1958

Account 2686

(Solvent Recovery Facility)

		Amount	Unit Cost
TOTAL LABOR		7,313	.030
Direct		4,227	.017
1-2-9		2,250	.009
Other		836	.003
TOTAL MATERIAL		2,742	.011
Direct		-0-	.0
1-2-9		2,504	.010
Other		238	.001
TOTAL LABOR & MATERIAL		10,055	.041
APE		6,523	.027
TOTAL WORKED MATERIAL		151	.0006
Natural Gas		82	.0003
Special Services	(2791)	69	.0002
TOTAL COST		16,729	.069
TOTAL SOLVENT RECLAIMED (Lbs.)		243,929	
	Days Operated:	29	
	Drums Processed:	664	
	Lbs. Condensed:	67,396	
	Lbs. Decanted:	176,533	
	Lbs. To A-4 Cascades:	4,879	
	Lbs. To A-5 Cascades:	239,050	

November - 1958

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	8,118	.039
Direct	5,108	.025
1-2-9	2,437	.011
Other	573	.003
TOTAL MATERIAL	128	.0006
Direct	-0-	.0
1-2-9	(122)	
Other	250	.0012
TOTAL LABOR & MATERIAL	8,246	.040
APE	7,834	.038
TOTAL WORKED MATERIAL	122	.0006
Natural Gas	80	.0004
Special Services (2791)	40	.0002
TOTAL COST	16,202	.078
TOTAL SOLVENT RECLAIMED (Lbs.)		208,175

Days Operated:	30
Drums Processed:	737
Lbs. Condensed:	92,869
Lbs. Decanted:	115,306
Lbs. to A-4 Cascades:	188,802
Lbs. to A-5 Cascades:	19,373

November - 1958

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	8,118	.039
Direct	5,108	.025
1-2-9	2,437	.011
Other	573	.003
TOTAL MATERIAL	128	.0006
Direct	-0-	.0
1-2-9	(122)	
Other	250	.0012
TOTAL LABOR & MATERIAL	8,246	.040
APE	7,834	.038
TOTAL WORKED MATERIAL	122	.0006
Natural Gas	80	.0004
Special Services (2791)	40	.0002
TOTAL COST	16,202	.078
TOTAL SOLVENT RECLAIMED (Lbs.)		208,175
Days Operated:		30
Drums Processed:		737
Lbs. Condensed:		92,869
Lbs. Decanted:		115,306
Lbs. to A-4 Cascades:		188,802
Lbs. to A-5 Cascades:		19,373

December - 1958

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	7,528	.065
Direct	4,484	.039
1-2-9	1,992	.017
Other	1,052	.009
TOTAL MATERIAL	1,392	.012
Direct	-0-	-0-
1-2-9	1,029	.009
Other	363	.003
TOTAL LABOR & MATERIAL	8,920	.077
APE	6,262	.054
TOTAL WORKED MATERIAL	29	.0002
Natural Gas	1	-0-
Special Services (2791)	28	.0002
TOTAL COST	15,211	.131
TOTAL SOLVENT RECLEANED (lbs.)		116,195

Days Operated:	30
Drums Processed:	475
Lbs. Condensed:	48,583
Lbs. Decanted:	67,612
Lbs. to A-4 Cascades:	32,750
Lbs. to A-5 Cascades:	83,445

December - 1958

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	7528	.065
Direct	4,484	.039
1-2-9	1,992	.017
Other	1,052	.009
TOTAL MATERIAL	1392	.012
Direct	-0-	-0-
1-2-9	1,029	.009
Other	363	.003
TOTAL LABOR & MATERIAL	8920	.077
APE	6,262	.054
TOTAL WORKED MATERIAL	29	.0002
Natural Gas	1	-0-
Special Services (2791)	28	.0002
TOTAL COST	15,211	.131
TOTAL SOLVENT RECLAIMED (lbs.)		116,195

Days Operated:	30
Drums Processed:	475
Lbs. Condensed:	48,583
Lbs. Decanted:	67,612
Lbs. to A-4 Cascades:	32,750
Lbs. to A-5 Cascades:	83,445

January - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	3,334	.064
Direct	2,274	.044
1-2-9	744	.014
Other	316	.006
TOTAL MATERIAL	337	.006
Direct	2	.000
1-2-9	286	.005
Other	49	.001
TOTAL LABOR & MATERIAL	3,671	.070
APE	3,043	.058
TOTAL WORKED MATERIAL	44	.001
Natural Gas	44	.001
Special Services (2791)	0	.000
TOTAL COST	6,758	.129
TOTAL SOLVENT RECLAIMED (lbs)		52,333

Days Operated:	16
Drums Processed:	192
Lbs. Condensed:	29,481
Lbs. Decanted:	22,852
Lbs. to A-4 Cascades:	-0-
Lbs. to A-5 Cascades:	52,333

January - 1959

Account 2686
Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	3,334	.064
Direct	2,274	.044
1-2-9	744	.014
Other	316	.006
TOTAL MATERIAL	337	.006
Direct	2	.000
1-2-9	286	.005
Other	49	.001
TOTAL LABOR & MATERIAL	3,671	.070
APE	3,043	.058
TOTAL WORKED MATERIAL	44	.001
Natural Gas	44	.001
Special Services (2791)	-0-	-0-
TOTAL COST	6,758	.129
TOTAL SOLVENT RECLAIMED (lbs)		52,333
Days Operated:		16
Drums Processed:		192
Lbs. Condensed:		29,481
Lbs. Decanted:		22,852
Lbs. to A-4 Cascades:		-0-
Lbs. to A-5 Cascades:		52,333

February - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	1,021	.04
Direct	340	.01
1-2-9	610	.02
Other	71	.01
TOTAL MATERIAL	612	.02
Direct	0	0
1-2-9	527	.019
Other	85	.001
TOTAL LABOR & MATERIAL	1,633	.06
APE	1,101	.04
TOTAL WORKED MATERIAL	23	0
Natural Gas	0	0
Special Services (2791)	23	0
TOTAL COST	2,757	.10
TOTAL SOLVENT RECLAIMED (Lbs.)		27,630
Days Operated:		0
Drums Processed:		0
Lbs. Condensed:		0
Lbs. Decanted:		27,630
Lbs. to A-4 Cascades:		18,868
Lbs. to A-5 Cascades:		8,762

February - 1959

Account 2686
Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	1,021	.04
Direct	340	.01
1-2-9	610	.02
Other	71	.01
TOTAL MATERIAL	612	.02
Direct	0	
1-2-9	527	.019
Other	85	.001
TOTAL LABOR & MATERIAL	1,633	.06
APE	1,101	.04
TOTAL WORKED MATERIAL	23	.00
Natural Gas	0	0
Special Services (2791)	23	0
TOTAL COST	2757	.10
TOTAL SOLVENT RECLAIMED (lbs.)	~~27~~	27,630
Days Operated:		0
Drums Processed:		0
Lbs. Condensed:		0
Lbs. Decanted:		27,630
Lbs. to A-4 Cascades:		18,868
Lbs. to A-5 Cascades:		8,762

MARCH - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	2,929	.047
Direct	1,791	.029
1-2-9	994	.016
Other	144	.002
TOTAL MATERIAL	363	.006
Direct	0	0
1-2-9	233	.004
Other	130	.002
TOTAL LABOR & MATERIAL	3,292	.053
APE	2,663	.042
TOTAL WORKED MATERIAL	32	.001
Natural Gas	32	.001
Special Services (2791)	0	0
TOTAL COST	5,987	.096
TOTAL SOLVENT RECLAIMED (Lbs.)		62,664

Days Operated:	13
Drums Processed:	158
Lbs. Condensed:	24,912
Lbs. Decanted	37,752
Lbs to A-4 Cascades:	62,664
Lbs. to A-5 Cascades:	0

MARCH - 1959

Account 2686
Solvent Recovery Facility

	Amount	Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,929	.047	.118
Direct	1,791	.029	.072
1-2-9	994	.016	.040
Other	144	.002	.006
TOTAL MATERIAL	363	.006	.014
Direct	—	—	—
1-2-9	233	.004	.009
Other	130	.002	.005
TOTAL LABOR & MATERIAL	3292	.053	.132
APE	2,663	.042	.107
TOTAL WORKED MATERIAL	32	.001	.001
Natural Gas	32	.001	.001
Special Services (2791)	0	0	
TOTAL COST	5,987	.096	.240
TOTAL SOLVENT RECLAIMED (Lbs.)		62,664	

Days Operated:	13
Drums Processed:	158
Lbs. Condensed:	24,912
Lbs. Decanted	37,752
Lbs to A-4 Cascades:	62,664
Lbs. to A-5 Cascades:	0

APRIL - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	6,247	.033
Direct	4,160	.022
1-2-9	1,361	.007
Other	726	.004
TOTAL MATERIAL	627	.003
Direct	0	0
1-2-9	193	.001
Other	434	.002
TOTAL LABOR & MATERIAL	6,874	.036
APE	5,970	.032
TOTAL WORKED MATERIAL	99	.001
Natural Gas	60	.0003
Special Services (2791)	39	.0002
TOTAL COST	12,943	.069
TOTAL SOLVENT RECLAIMED (Lbs.)		186,506

Days Operated:	30
Drums Processed:	423½
Lbs. Condensed:	30,391
Lbs. Decanted	156,115
Lbs. to A-4 Cascades:	9,609
Lbs. to A-5 Cascades:	176,897

APRIL - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	Condensed Unit Cost
TOTAL LABOR	6,247	.034	.206
Direct	4,160	.022	.137
1-2-9	1361	.007	.045
Other	726	.004	.024
TOTAL MATERIAL	627	.003	.021
Direct	0		-
1-2-9	193	.001	.006
Other	434	.002	.015
TOTAL LABOR & MATERIAL	6874	.036	.227
APE	5,970	.032	.196
TOTAL WORKED MATERIAL	99	.001	.003
Natural Gas	60		.002
Special Services (2791)	39	.0002	.001
TOTAL COST	12,943	.069	.426
TOTAL SOLVENT RECLAIMED (lbs.)		186,506	

Days Operated:	30
Drums Processed:	4/23½
lbs. Condensed:	30391
lbs. Decanted	156,115
lbs. to A-4 Cascades:	9,609
lbs. to A-5 Cascades:	176,897

May - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	5,638	.036
Direct	3,338	.021
1-2-9	941	.006
Other	1,359	.009
TOTAL MATERIAL	621	.004
Direct	--	--
1-2-9	558	.004
Other	63	.000
TOTAL LABOR & MATERIAL	6,259	.040
APE	5,243	.033
TOTAL WORKED MATERIAL	141	.001
Natural Gas	108	.001
Special Services (2791)	33	.000
TOTAL COST	11,724	.074
TOTAL SOLVENT RECLAIMED (Lbs.)		158,389

Days Operated:	30
Drums Processed:	350
Lbs. Condensed:	20,327
Lbs. Decanted	138,062
Lbs. to A-4 Cascades:	4,904
Lbs. to A-5 Storage:	153,485

May - 1959

Account 9686

Solvent Recovery Facility

	Amount	Unit Cost	Condensed Unit Cost
TOTAL LABOR	5638	.036	.277
Direct	3338	.021	.164
1-2-9	941	.006	.046
Other	1,359	.009	.067
TOTAL MATERIAL	621	.004	.031
Direct	—	—	—
1-2-9	558	.004	.028
Other	63	.0	.003
TOTAL LABOR & MATERIAL	6,259	.040	.308
APE	5,243	.033	.258
TOTAL WORKED MATERIAL	141	.001	.007
Natural Gas	108	.001	.005
Special Services (2791)	33	-0-	.002
TOTAL COST	11,724	.074	.577
TOTAL SOLVENT RECLAIMED (Lbs.)		158,389	
Days Operated:		31	
Drums Processed:		350	
Lbs. Condensed:		33,327	
Lbs. Decanted		138,062	
Lbs. to A-4 Cascades:		4,904	
Lbs. to A-5 Storage:		153,485	

June - 1959

Account 2686

Solvent Recovery Facility

		Amount	Unit Cost
TOTAL LABOR		6,237	.162
Direct		3,832	.100
1-2-9		1,234	.032
Other		1,171	.030
TOTAL MATERIAL		991	.026
Direct		-0-	-0-
1-2-9		775	.020
Other		216	.006
TOTAL LABOR & MATERIAL		7,228	.188
APE		5,959	.155
TOTAL WORKED MATERIAL		150	.004
Natural Gas		117	.003
Special Services (2791)		33	.001
TOTAL COST		13,337	.347
TOTAL SOLVENT RECLAIMED(lbs)			38,397
	Days Operated		31 wrong
	Drums Processed:		382
	Lbs. Condensed:		23,384 wrong - see next page
	Lbs. Decanted:		15,013 wrong
	Lbs. to A-4 Cascades:		14,289
	Lbs. to A-5 Storage:		24,108
	Total Lbs. Recovered to Date:		2,435,345 wrong

June - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed Unit Cost
TOTAL LABOR	6,237	.103		.298
Direct	3,832	.063		.152
1-2-9	1,234	.020		.049
Other	1,171	.020		.047
TOTAL MATERIAL	991	.016		.040
Direct	—	-		-
1-2-9	775	.013		.031
Other	216	.003		.009
TOTAL LABOR & MATERIAL	7228	.119		.288
APE	5,959	.099		.237
TOTAL WORKED MATERIAL	156	.002		.006
Natural Gas	117	.002		.005
Special Services (2791)	33	.000		.001
TOTAL COST	13,337	.220		.531
TOTAL SOLVENT RECLAIMED(lbs)		60,493		
Days Operated		30		
Drums Processed:		382		
Lbs. Condensed:		25,140	✓	
Lbs. Decanted:		35,353	✓	
Lbs. to A-4 Cascades:		—		
Lbs. to A-5 Storage:		60,493		
Total Lbs. Recovered to Date:		~~2,435,345~~ 2,396,948	✓	

K-885A (11-58) Y-12 Data Sheet

July - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	5,694	.148	
Direct	4,017	.105	
1-2-9	845	.022	
Other	832	.021	
TOTAL MATERIAL	300	.008	
Direct	-0-	-0-	
1-2-9	123	.003	
Other	177	.005	
TOTAL LABOR & MATERIAL	5,994	.156	
APE	5,799	.151	
TOTAL WORKED MATERIAL	205	.005	
Natural Gas	147	.004	
Special Services (2791)	58	.001	
TOTAL COST	11,998	.312	
TOTAL SOLVENT RECLAIMED (lbs)		38,397	
Days Operated:		31	
Drums Processed:		386	
Lbs. Condensed		23,384	
Lbs. Decanted:		15,013	
Lbs. To A-4 Cascades:		14,289	
Lbs. to A-5 Storage:		24,108	
Total Lbs. Recovered to Date:		2,435,345	✓

July - 1959

Account 2686
Solvent Recovery Facility

	Amount	Unit Cost	Condensed Unit Cost
TOTAL LABOR	5,694	.148	.243
Direct	4,017	.105	.172
1-2-9	845	.022	.036
Other	832	.021	.035
TOTAL MATERIAL	300	.008	.013
Direct	-0-	-0-	—
1-2-9	123	.003	.005
Other	177	.005	.008
TOTAL LABOR & MATERIAL	5,994	.156	.256
APE	5,799	.151	.278
TOTAL WORKED MATERIAL	205	.005	.009
Natural Gas	147	.004	.006
Special Services (2791)	58	.001	.003
TOTAL COST	11,998	.312	.513
TOTAL SOLVENT RECLAIMED (lbs)		38,397	

Days Operated:	31
Drums Processed:	386
lbs. Condensed	23384
lbs. Decanted:	15,013
lbs. To A-4 Cascades:	14289
lbs. to A-5 Storage:	24108
Total lbs. Recovered to Date:	2,135,345

X-885A (11-58) Y-12 Data Sheet

August - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	5,253	.132
Direct	3,709	.093
1-2-9	447	.011
Other	1,097	.028
TOTAL MATERIAL	865	.022
Direct	-0-	-0-
1-2-9	682	.017
Other	183	.005
TOTAL LABOR & MATERIAL	6,118	.154
APE	5,432	.136
TOTAL WORKED MATERIAL	168	.004
Natural Gas	140	.004
Special Services (2791)	28	.000
Total Cost	11,718	.294

TOTAL SOLVENT RECLAIMED (lbs)	39,890
Days Operated:	31
Drums on Hand - Beginning:	1,216
Drums on Hand - Ending:	1,013
Drums Processed:	368
Drums Transferred to 81-10:	165
Lbs. Condensed:	28,268
Lbs. Decanted:	11,622
Lbs. to A-4 Cascades:	34,890
Lbs. to A-5 Storage:	5,000
Total Lbs. Recovered to Date:	2,475,235 ✓

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August - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed Unit Cost
TOTAL LABOR	5,253	.132		.186
Direct	3,709	.093		.131
1-2-9	447	.011		.016
Other	1,097	.028		.039
TOTAL MATERIAL	865	.022		.031
Direct	—	—		—
1-2-9	682	.017		.024
Other	183	.005		.007
TOTAL LABOR & MATERIAL	6,118	.154		.217
APE	5432	.136		.192
TOTAL WORKED MATERIAL	168	.004		.006
Natural Gas	140	.004		.005
Special Services (2791)	28	.000		.001
Total Cost	11,718	.294		.415
TOTAL SOLVENT RECLAIMED (lbs)			39,890	
Days Operated:			31	
Drums on Hand - Beginning:			1216	
Drums on Hand - Ending:			1013	
Drums Processed:			368	
Drums Transferred to 81-10:			165	
Lab. Condensed:			25268	
Lbs. Decanted:			11,622	
Lbs. to A-4 Cascades:			34,890	
Lbs. to A-5 Storage:			5,000	
Total Lbs. Recovered to Date:			2,475,235	

September - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	5,916	.128	
Direct	4,071	.088	
1-2-9	725	.016	
Other	1,120	.024	
TOTAL MATERIAL	919	.020	
Direct	-0-	-0-	
1-2-9	707	.015	
Other	212	.005	
TOTAL LABOR & MATERIAL	6,835	.148	
APE	6,810	.148	
TOTAL WORKED MATERIAL	131	.003	
Natural Gas	131	.003	
Special Services (2791)	-0-	-0-	
TOTAL COST	13,776	.299	
TOTAL SOLVENT RECLAIMED (lbs.)			46,146

Days Operated:	30
Drums on Hand - Beginning:	1,013
Drums on Hand - Ending:	725
Drums Processed:	316
Drums Transferred to 81-10:	28
Lbs. Condensed:	24,037
Lbs. Decanted:	22,109
Lbs. to A-4 Cascades:	23,055
Lbs. to A-5 Storage:	23,091
Total Lbs. Recovered to Date:	2,521,381 ✓

September - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed Unit Cost
TOTAL LABOR	5,916	.128		.296
Direct	4,071	.088		.169
1-2-9	725	.016		.030
Other	1,120	.024		.047
TOTAL MATERIAL	919	.020		.038
Direct	—	—		—
1-2-9	707	.015		.029
Other	212	.005		.009
TOTAL LABOR & MATERIAL	6,835	.148		.284
APE	6,810	.148		.283
TOTAL WORKED MATERIAL	131	.003		.006
Natural Gas	131	.003		.006
Special Services (2791)	—	—		—
TOTAL COST	13,776	.299		.573
TOTAL SOLVENT RECLAIMED (lbs.)			46,146	
Days Operated:			30	
Drums on Hand - Beginning:			1013	
Drums on Hand - Ending:			725	
Drums Processed:			316	
Drums Transferred to 81-10:			28	
Lbs. Condensed:			24,037	
Lbs. Decanted:			22,109	
Lbs. to A-4 Cascades:			23,055	
Lbs. to A-5 Storage:			23,091	
Total Lbs. Recovered to Date:			2,521,381	

October - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	4,633	.156	
Direct	2,637	.088	
1-2-9	1,470	.050	
Other	526	.018	
TOTAL MATERIAL	457	.016	
Direct	-0-	-0-	
1-2-9	325	.011	
Other	132	.005	
TOTAL LABOR & MATERIAL	5,090	.172	
APE	3,720	.125	
TOTAL WORKED MATERIAL	139	.005	
Natural Gas	139	.005	
Special Services (2791)	-0-	-0-	
TOTAL COST	8,949	.302	
TOTAL SOLVENT RECLAIMED (lbs.)			29,664
Days Operated:			20
Drums on Hand - Beginning:			725
Drums on Hand - Ending:			747
Drums Processed:			108
Drums Transferred to 81-10:			130
Lbs. Condensed:			8,166
Lbs. Decanted:			21,498
Lbs. to A-4 Cascades:			-0-
Lbs. to A-5 Storage:			29,664
Total Lbs. Recovered to Date:			2,551,045 ✓

October - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed Unit Cost
TOTAL LABOR	4,633	.156		.567
Direct	2,637	.088		.323
1-2-9	1,470	.050		.180
Other	526	.018		.064
TOTAL MATERIAL	457	.016		.056
Direct	—	—		—
1-2-9	325	.011		.040
Other	132	.005		.016
TOTAL LABOR & MATERIAL	5,090	.172		.623
AFE	3,720	.125		.456
TOTAL WORKED MATERIAL	139	.005		.017
Natural Gas	139	.005		.017
Special Services (2791)	—	—		—
TOTAL COST	8,949	.302		1.096
TOTAL SOLVENT RECLAIMED (lbs.)			29,664	

Days Operated:	20
Drums on Hand - Beginning:	725
Drums on Hand - Ending:	747
Drums Processed:	108
Drums Transferred to 81-10:	130
Lbs. Condensed:	8,166
Lbs. Decanted:	21,498
Lbs. to A-4 Cascades:	-0-
Lbs. to A-5 Storage:	29,664
Total Lbs. Recovered to Date:	2,551,045

November - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	2,537	.128	
Direct	-0-	---	
1-2-9	2,537	.128	
Other	-0-	---	
TOTAL MATERIAL	1,356	.068	
Direct	-0-	---	
1-2-9	1,349	.068	
Other	7	---	
TOTAL LABOR & MATERIAL	3,893	.196	
APE	2,375	.120	
TOTAL WORKED MATERIAL	14	.001	
Natural Gas	1	---	
Special Services (2791)	13	.001	
TOTAL COST	6,280	.317	
TOTAL SOLVENT RECLAIMED (lbs.)			19,820
Days Operated:			-0-
Drums on Hand - Beginning:			747
Drums on Hand - Ending:			1,024
Drums Processed:			-0-
Drums Transferred to 81-10:			277
Lbs. Condensed:			-0-
Lbs. Decanted:			19,820
Lbs. to A-4 Cascades:			19,820
Lbs. to A-5 Storage:			-0-
Total Lbs. Recovered to Date:			2,570,865 ✓

November - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	2,537	.128	
Direct	-0-	—	
1-2-9	2,537	.128	
Other	-0-	—	
TOTAL MATERIAL	1,356	.068	
Direct	-0-	—	
1-2-9	1,349	.068	
Other	7	—	
TOTAL LABOR & MATERIAL	3,893	.196	
APE	2,375	.120	
TOTAL WORKED MATERIAL	14	.001	
Natural Gas	1	—	
Special Services (7791)	13	.001	
TOTAL COST	6,280	.317	
TOTAL SOLVENT RECLAIMED (lbs.)			19,820
Days Operated:			-0-
Drums on Hand - Beginning:			747
Drums on Hand - Ending:			1,024
Drums Processed:			-0-
Drums Transferred to 81-10:			277
Lbs. Condensed:			-0-
Lbs. Decanted:			19,820
Lbs. to A-4 Cascades:			19,820
Lbs. to L- Storage:			-0-
Total Lbs. Recovered to Date:			2,570,865

585A (11-58) Y-12 Data Sheet

December - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost	
TOTAL LABOR	2,752	.056	
Direct	1,559	.032	
1-2-9	912	.018	
Other	281	.006	
TOTAL MATERIAL	272	.006	
Direct	-	-	
1-2-9	84	.002	
Other	188	.004	
TOTAL LABOR & MATERIAL	3,024	.062	
APE	2,470	.051	
TOTAL WORKED MATERIAL	78	.001	
Natural Gas	58	.001	
Special Services (2791)	20	-	
TOTAL COST	5,572	.114	
TOTAL SOLVENT RECLAIMED (lbs.)			48,842
Days Operated:			4
Drums on Hand - Beginning:			1,024
Drums on Hand - Ending:			1,069
Drums Processed:			186
Drums Transferred to 81-10:			231
Lbs. Condensed:			5,901
Lbs. Decanted:			42,941
Lbs. to A-4 Cascades:			25,306
Lbs. to A-9 Storage:			23,536
Total Lbs. Recovered to Date:			2,619,707 ✓

December - 1959

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,752	.056		.466
Direct	1,559	.032		.264
1-2-9	912	.018		.155
Other	281	.006		.047
TOTAL MATERIAL	272	.006		.046
Direct	—	—		—
1-2-9	84	.002		.014
Other	188	.004		.032
TOTAL LABOR & MATERIAL	3,024	.062		.512
APE	2,470	.051		.419
TOTAL WORKED MATERIAL	78	.001		.013
Natural Gas	58	.001		.010
Special Services (2791)	20	—		.003
TOTAL COST	5,572	.114		.944
TOTAL SOLVENT RECLAIMED (lbs.)			48,842	

Days Operated:	4
Drums on Hand - Beginning:	1,024
Drums on Hand - Ending:	1,069
Drums Processed:	186
Drums Transferred to 81-10:	231
Lbs. Condensed:	5,701
Lbs. Decanted:	42,941
Lbs. to A-4 Cascades:	25,306
Lbs. to A-5 Storage:	23,536
Total Lbs. Recovered to Date:	2,619,707

January - 1960

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost
TOTAL LABOR	4,042	.054
Direct	2,080	.028
1-2-9	1,633	.022
Other	329	.004
TOTAL MATERIAL	515	.007
Direct	-	-
1-2-9	316	.004
Other	199	.003
TOTAL LABOR & MATERIAL	4,557	.061
Ape	4,023	.054
TOTAL WORKED MATERIAL	89	.001
Natural Gas	89	.001
Special Services (2791)	-	-
TOTAL COST	8,669	.116

TOTAL SOLVENT RECLAIMED (lbs.) 74,464

Days Operated:	20
Drums on Hand - Beginning:	1,069
Drums on Hand - Ending	932
Drums Processed:	167
Drums Transferred to 81-10:	30
Lbs. Condensed:	24,202
Lbs. Decanted:	50,262
Lbs. to A-4 Cascades:	33,841
Lbs. to A-5 Storage:	40,623
Total Lbs. Recovered to Date:	2,694,171 ✓

January - 1960

Account 2686

Solvent Recovery Facility

	Amount	Unit Cost		Condensed - Unit Cost
TOTAL LABOR	4042	.054		.167
Direct	2,080	.028		.086
1-2-9	1,633	.022		.067
Other	329	.004		.014
TOTAL MATERIAL	515	.007		.021
Direct	—	—		—
1-2-9	316	.004		.013
Other	199	.003		.008
TOTAL LABOR & MATERIAL	4,557	.061		.188
Ape	4023	.054		.166
TOTAL WORKED MATERIAL	89	.001		.004
Natural Gas	89	.001		.004
Special Services (2791)	—	—		—
TOTAL COST	8,669	.116		.358
TOTAL SOLVENT RECLAIMED (lbs.)			74464	

Days Operated:	20
Drums on Hand - Beginning:	1069
Drums on Hand - Ending	932
Drums Processed:	167
Drums Transferred to S1-10:	30
Lbs. Condensed:	24202
Lbs. Decanted:	50,262
Lbs. to A-4 Cascades:	33,841
Lbs. to A-3 Storage:	40,623
Total Lbs. Recovered to Date:	2,694,171

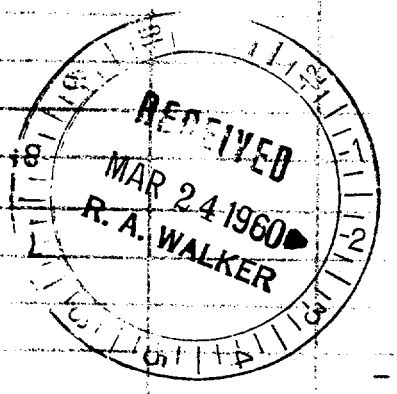
February - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	3,778	.112		.268
Direct	2,099	.062		.149
1-2-9	1,625	.048		.115
Other	54	.002		.004
TOTAL MATERIAL	596	.018		.042
Direct	--	--		--
1-2-9	473	.014		.033
Other	123	.004		.009
TOTAL LABOR & MATERIAL	4,374	.130		.310
APE	4,015	.119		.285
TOTAL WORKED MATERIAL	106	.003		.007
Natural Gas	106	.003		.007
Special Services (2791)	--	--		--
TOTAL COST	8,495	.252		.602
TOTAL SOLVENT RECLAIMED (lbs.)			33,642	

Days Operated:	20
Drums on Hand - Beginning:	932
Drums on Hand - Ending:	875
Drums Processed:	110
Drums Transferred to 81-10:	53
Lbs. Condensed:	14,100
Lbs. Decanted:	19,542
Lbs. to A-4 Cascades:	18,998
Lbs. to A-5 Storage:	14,644
Total Lbs. Recovered to Date:	2,727,813 ✓



February - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	3,778	.112		.268
Direct	2,099	.062		.149
1-2-9	1,625	.048		.115
Other	54	.002		.004
TOTAL MATERIAL	596	.018		.042
Direct	—	—		—
1-2-9	473	.014		.033
Other	123	.004		.009
TOTAL LABOR & MATERIAL	4,374	.130		.310
APE	4,015	.119		.285
TOTAL WORKED MATERIAL	106	.003		.007
Natural Gas	106	.003		.007
Special Services (2791)	—	—		
TOTAL COST	8,495	.252		.602
TOTAL SOLVENT RECLAIMED (lbs.)			33,642	
Days Operated			20	
Drums on Hand - Beginning:			932	
Drums on Hand - Ending:			875	
Drums Processed:			110	
Drums Transferred to B1-10:			53	
Lbs. Condensed:			14,100	
Lbs. Decanted:			19,542	
Lbs. to A-4 Cascades:			15,998	
Lbs. to A-5 Storage:			14,644	
Total Lbs. Recovered to Date:			2,727,813	

March - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	4,926	.081		.239
Direct	3,277	.054		.159
1-2-9	1,649	.027		.080
Other	-	-		-
TOTAL MATERIAL	888	.014		.043
Direct	-	-		-
1-2-9	511	.008		.025
Other	377	.006		.018
TOTAL LABOR & MATERIAL	5,814	.095		.282
APE	4,775	.078		.232
TOTAL WORKED MATERIAL	93	.001		.005
Natural Gas	-	-		-
Special Services (2791)	93	.001		.001
TOTAL COST	10,682	.174		.519
TOTAL SOLVENT RECLAIMED (lbs.)			61,220	
Days Operated:			27	
Drums on Hand - Beginning:			875	
Drums on Hand - Ending:			632	
Drums Processed:			276	
Drums Transferred to 81-10:			33	
Lbs. Condensed:			20,594	
Lbs. Decanted:			40,626	
Lbs. to A-4 Cascades:			-0-	
Lbs. to A-5 Storage:			61,220	
Total Lbs. Recovered to Date:			2,789,033	✓

March - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	4,926	.081		.239
Direct	3,277	.054		.159
1-2-9	1,649	.027		.080
Other	—	—		—
TOTAL MATERIAL	888	.014		.043
Direct	—	—		—
1-2-9	511	.008		.025
Other	377	.006		.018
TOTAL LABOR & MATERIAL	5,814	.095		.282
A&E	4,775	.078		.232
TOTAL WORKED MATERIAL	93	.001		.005
Natural Gas	—	—		—
Special Services (2791)	93	.001		.005
TOTAL COST	10,682	.174		.519
TOTAL SOLVENT RECLAIMED (lbs.)			61,220	
Days Operated:			27	
Drums on Hand - Beginning:			875	
Drums on Hand - Ending:			632	
Drums Processed:			276	
Drums Transferred to 81-10:			33	
Lbs. Condensed:			20,594	
Lbs. Decanted:			40,626	
Lbs. to A-4 Cascades:			—	
Lbs. to A-5 Storage:			61,220	
Total Lbs. Recovered to Date:			2,789,033	

April - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	4,800	.069		.241
Direct	3,825	.055		.192
1-2-9	831	.012		.042
Other	144	.002		.007
TOTAL MATERIAL	612	.009		.031
Direct	--	--		--
1-2-9	298	.004		.015
Other	314	.005		.016
TOTAL LABOR & MATERIAL	5,412	.078		.272
APE	4,990	.072		.251
TOTAL WORKED MATERIAL	--	--		--
Natural Gas	--	--		--
Special Services (2791)	--	--		--
TOTAL COST	10,402	.150		.523
TOTAL SOLVENT RECLAIMED (lbs.)			69,213	
Days Operated:			30	
Drums on Hand * Beginning			632	
Drums on Hand - Ending			555	
Drums Processed:			261	
Drums Transferred to 81-10:			184	
Lbs. Condensed:			19,873	
Lbs. Decanted:			49,340	
Lbs. to A-4 Cascades:			11,437	
Lbs. to A-5 Storage:			57,776	
Total Lbs. Recovered to Date:			2,858,246	✓

April - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	9800	.069		.241
Direct	3825	.055		.192
1-2-9	831	.012		.042
Other	144	.002		.007
TOTAL MATERIAL	612	.009		.030
Direct	—	—		—
1-2-9	298	.004		.015
Other	314	.005		.016
TOTAL LABOR & MATERIAL	5412	.078		.272
AIE	7990	.072		.251
TOTAL WORKED MATERIAL	—	—		—
Natural Gas	—	—		—
Special Services (2791)	—	—		—
TOTAL COST	10,402	.150		.523
TOTAL SOLVENT RECLAIMED (lbs.)			69,213	
Days Operated:			30	
Drums on Hand # Beginning			632	
Drums on Hand - Ending			555	
Drums Processed:			261	
Drums Transferred to S1-1C:			184	
Lbs. Condensed:			19,873	
Lbs. Decanted:			19,340	
Lbs. to A-4 Cascades:			11,437	
Lbs. to A-5 Storage:			57,776	
Total Lbs. Recovered to Date:			2,858,246	

May - 1960

Account 2686

Solvent Recovery Facility

	Total Prod. Amount	Total Prod. Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,431	.056	.364
Direct	1,669	.038	.250
1-2-9	482	.011	.072
Other	280	.007	.042
TOTAL MATERIAL	478	.011	.071
Direct	-0-	—	—
1-2-9	314	.007	.047
Other	164	.004	.024
TOTAL LABOR & MATERIAL	2,909	.067	.435
APE	2,568	.059	.384
TOTAL WORKED MATERIAL	23	.001	.003
Natural Gas	-0-	—	—
Special Services (2791)	23	.001	.003
TOTAL COST	5,500	.127	.822
TOTAL SOLVENT RECLAIMED (lbs.)		43,372	

Days Operated:	21
Drums on Hand - Beginning:	555
Drums on Hand - Ending:	590
Drums Processed:	103
Drums Transferred to 81-10:	138
Lbs. Condensed:	6,687
Lbs. Decanted:	36,685
Lbs. to A-4 Cascades:	43,372
Lbs. to A-5 Storage	-0-
Total Lbs. Recovered to Date:	2,901,618 ✓

May - 1960

Account 2686

Solvent Recovery Facility

	Amount	Total Prod. Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,431	.056	.364
Direct	1,669	.038	.250
1-2-9	782	.011	.072
Other	280	.007	.042
TOTAL MATERIAL	478	.011	.071
Direct	-0-	—	—
1-2-9	314	.007	.047
Other	164	.004	.024
TOTAL LABOR & MATERIAL	2,909	.067	.435
AFE	2,568	.059	.384
TOTAL WORKED MATERIAL	23	.001	.003
Natural Gas	—	—	—
Special Services (2791)	23	.001	.003
TOTAL COST	5,500	.127	.822
TOTAL SOLVENT RECLAIMED (lbs.)		43,372	

Days Operated:	21
Drums on Hand - Beginning:	555
Drums on Hand - Ending:	590
Drums Processed:	103
Drums Transferred to 81-10:	138
Lbs. Condensed:	6,687
Lbs. Decanted:	36,685
Lbs. to A-4 Cascades:	43,372
Lbs. to A-5 Storage	-0-
Total Lbs. Recovered to Date:	290,618

JUNE - 1960

Account 2686
Solvent Recovery Facility

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,852	.155		.716
Direct	1,810	.098		.454
1-2-9	810	.044		.204
Other	232	.013		.058
TOTAL MATERIAL	546	.030		.137
Direct	--	--		--
1-2-9	246	.013		.062
Other	300	.017		.075
TOTAL LABOR & MATERIAL	3,398	.185		.853
APE	3,344	.182		.839
TOTAL WORKED MATERIAL	25	.001		.006
Natural Gas	--	--		--
Special Services (2791)	25	.001		.006
TOTAL COST	6,767	.368		1.698
TOTAL SOLVENT RECLAIMED (lbs.)			18,410	

Days Operated:	22
Drums on Hand - Beginning:	590
Drums on Hand - Ending:	536
Drums Processed:	89
Drums Transferred to 81-10:	35
Lbs. Condensed:	3,986
Lbs. Decanted:	14,424
Lbs. to A-4 Cascades:	18,410
Lbs. to A-5 Storage:	--
Total Lbs. Recovered to Date:	2,920,028 ✓

JUNE - 1960

Account 2686
Solvent Recovery Facility

	Total Prod. Amount	Total Prod. Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,852	.155	.716
Direct	1,810	.098	.454
1-2-9	810	.044	.204
Other	232	.013	.058
TOTAL MATERIAL	546	.030	.137
Direct	—	—	—
1-2-9	246	.013	.062
Other	300	.017	.075
TOTAL LABOR & MATERIAL	3,398	.185	.853
APE	3,344	.182	.839
TOTAL WORKED MATERIAL	25	.001	.006
Natural Gas	—	—	—
Special Services (2791)	25	.001	.006
TOTAL COST	6,767	.368	1.698

TOTAL SOLVENT RECLAIMED (lbs.)	18,410
Days Operated:	22
Drums on Hand - Beginning:	590
Drums on Hand - Ending:	536
Drums Processed:	89
Drums Transferred to 81-10:	35
Lbs. Condensed:	3,986
Lbs. Decanted:	14,424
Lbs. to A-4 Cascades:	18,410
Lbs. to A-5 Storage:	—
Total Lbs. Recovered to Date:	2,920,028

JULY - 1960

Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	1,792	.094		.244
Direct	1,533	.080		.208
Maint. & Engr.	259	.014		.036
Departmental	--	--		--
Miscellaneous	--	--		--
TOTAL MATERIAL	540	.028		.073
Direct	--	--		--
Maint. & Engr.	255	.013		.035
Departmental	285	.015		.038
Miscellaneous	--	--		--
TOTAL LABOR & MATERIAL	2,332	.122		.317
APE	1,745	.091		.237
TOTAL WORKED MATERIAL	26	.001		.004
Special Services (2791)	26	.001		.004
TOTAL COST	4,103	.214		.558
TOTAL SOLVENT RECLAIMED (lbs.)			19,155	
Days Operated:			20	
Drums on Hand - Beginning:			536	
Drums on Hand - Ending:			524	
Drums Processed:			75	
Drums Transferred to 81-10:			63	
Lbs. Condensed:			7,359	
Lbs. Decanted:			11,796	
Lbs. to A-4 Cascades:			19,155	
Lbs. to A-5 Storage:			-C-	
Total Lbs. Recovered to Date:			2,939,183	✓

JULY - 1960

Account 2706
SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	1,792	.094		.299
Direct	1,533	.080		.208
Maint. & Engr.	259	.014		.036
Departmental	-0-	—		—
Miscellaneous	-0-	—		
TOTAL MATERIAL	540	.028		.073
Direct	-0-	—		—
Maint. & Engr.	255	.013		.035
Departmental	285	.015		.038
Miscellaneous	-0-	—		
TOTAL LABOR & MATERIAL	2,332	.122		.317
APE	1,775	.091		.237
TOTAL WORKED MATERIAL	26	.001		.004
Special Services (2791)	26	.001		.004
TOTAL COST	4,163	.214		.558
TOTAL SOLVENT RECLAIMED (lbs.)			19,155	
Days Operated:			20	
Drums on Hand - Beginning:			536	
Drums on Hand - Ending:			524	
Drums Processed:			75	
Drums Transferred to C1-10:			63	
Lbs. Condensed:			7359	
Lbs. Decanted:			11,796	
Lbs. to A-4 Cascades:			19,155	
Lbs. to A-5 Storage:			—	
Total Lbs. Recovered to Date:			2,939,153	

AUGUST - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost	Condensed Unit Cost
TOTAL LABOR	3,369	.184	1.340
Direct	2,122	.116	.844
Maint. & Engr.	1,247	.068	.496
Departmental	-0-	--	--
Miscellaneous	-0-	--	--
TOTAL MATERIAL	790	.044	.314
Direct	-0-	--	--
Maint. & Engr.	375	.021	.149
Departmental	415	.023	.165
Miscellaneous	-0-	--	--
TOTAL LABOR & MATERIAL	4,159	.228	1.654
APE	3,063	.168	1.218
TOTAL WORKED MATERIAL	76	.004	.030
Special Services (2791)	76	.004	.030
TOTAL COST	7,298	.400	2.902
TOTAL SOLVENT RECLAIMED (lbs.)		18,266	

Days Operated:	23
Drums on Hand - Beginning:	524
Drums on Hand - Ending:	509
Drums Processed:	73
Drums Transferred to 81-10:	58
Lbs. Condensed:	2,515
Lbs. Decanted:	15,751
Lbs. to A-4 Cascades:	18,266
Lbs. to A-5 Storage:	-0-
Total Lbs. Recovered to Date:	2,957,449 ✓

AUGUST - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	3,369	.184		1.340
Direct	2,122	.116		.844
Maint. & Engr.	1,247	.068		.496
Departmental	—	—		—
Miscellaneous	—	—		—
TOTAL MATERIAL	790	.044		.314
Direct	—	—		—
Maint. & Engr.	375	.021		.149
Departmental	415	.023		.165
Miscellaneous	—	—		—
TOTAL LABOR & MATERIAL	4,159	.228		1.654
A-E	3,063	.168		1.218
TOTAL WORKED MATERIAL	76	.004		.030
Special Services (2791)	76	.004		.030
TOTAL COST	7,298	.400		2.902
TOTAL SOLVENT RECLAIMED (lbs.)			18,266	
Days Operated:			23	
Drums on Hand - Beginning:			524	
Drums on Hand - Ending:			509	
Drums Processed:			73	
Drums Transferred to S1-10:			58	
Lbs. Condensed:			2,515	
Lbs. Decanted:			15,751	
Lbs. to A-4 Cascades:			18,266	
Lbs. to A-5 Storage:			—	
Total Lbs. Recovered to Date:			2,957,449	

SEPTEMBER - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,397	.098	.580
Direct	1,492	.061	.361
Maint. & Engr.	905	.037	.219
Departmental	--	--	--
Miscellaneous	--	--	--
TOTAL MATERIAL	673	.028	.163
Direct	--	--	--
Maint. & Engr.	543	.022	.131
Departmental	130	.006	.032
Miscellaneous	--	--	--
TOTAL LABOR & MATERIAL	3,070	.126	.743
APE	2,261	.093	.548
TOTAL WORKED MATERIAL	38	.001	.009
Special Services (2791)	38	.001	.009
TOTAL COST	5,369	.220	1.300

TOTAL SOLVENT RECLAIMED (lbs.)	24,373
Days Operated:	19
Drums on Hand - Beginning:	509
Drums on Hand - Ending:	521
Drums Processed:	47
Drums Transferred to 81-10:	59
Lbs. Condensed:	4,130
Lbs. Decanted:	20,243
Lbs. to A-4 Cascades:	24,373
Lbs. to A-5 Cascades:	-0-
Total Lbs. Recovered to Date:	2,981,822 ✓

SEPTEMBER - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,397	.098		.580
Direct	1,492	.061		.361
Maint. & Engr.	905	.037		.219
Departmental	-	-		-
Miscellaneous	-	-		-
TOTAL MATERIAL	673	.028		.163
Direct	-	-		-
Maint. & Engr.	543	.022		.131
Departmental	130	.006		.032
Miscellaneous	-	-		
TOTAL LABOR & MATERIAL	3,070	.126		.743
APE	2,261	.093		.548
TOTAL WORKED MATERIAL	38	.001		.009
Special Services (3791)	38	.001		.009
TOTAL COST	5,369	.220		1.300
TOTAL SOLVENT RECLAIMED (lbs.)			24,373	
Days Operated:			19	
Drums on Hand - Beginning:			509	
Drums on Hand - Ending:			521	
Drums Processed:			47	
Drums Transferred to 81-10:			59	
Lbs. Condensed:			4,133	
Lbs. Decanted:			20,243	
Lbs. to A-4 Cascades:			24,373	
Lbs. to A-5 Cascades:			---	
Total Lbs. Recovered to Date:			298,822	

OCTOBER - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,709	.096		.423
Direct	1,963	.070		.307
Maint. & Engr.	746	.026		.116
Departmental	-0-	-0-		-0-
Miscellaneous	-0-	-0-		-0-
TOTAL MATERIAL	527	.019		.082
Direct	-0-	-0-		-0-
Maint. & Engr.	428	.015		.067
Departmental	99	.004		.015
Miscellaneous	-0-	-0-		-0-
TOTAL LABOR & MATERIAL	3,236	.115		.505
APE	2,555	.091		.399
TOTAL WORKED MATERIAL	27	.001		.004
Special Services (2791)	27	.001		.004
TOTAL COST	5,818	.207		.908
TOTAL SOLVENT RECLAIMED (lbs.)			28,090	
Days Operated:			18	
Drums on Hand - Beginning:			521	
Drums on Hand - Ending:			651	
Drums Processed:			84	
Drums Transferred to 81-10:			214	
Lbs. Condensed:			6,403	
Lbs. Decanted:			21,687	
Lbs. to A-4 Cascades:			28,090	
Lbs. to A-5 Storage:			-0-	
Total Lbs. Recovered to Date:			3,009,912	✓

OCTOBER - 1960

Account 2600

SOLVENT RECOVERY FACILITY

	Amount	Total Prod. Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,709	.096		.423
Direct	1,963	.070		.307
Maint. & Engr.	746	.026		.116
Departmental	-			—
Miscellaneous	-			—
TOTAL MATERIAL	527	.019		.082
Direct	—	—		—
Maint. & Engr.	428	.015		.067
Departmental	99	.004		.015
Miscellaneous	—	—		—
TOTAL LABOR & MATERIAL	3,236	.115		.505
APE	2,555	.091		.399
TOTAL WORKED MATERIAL	27	.001		.004
Special Services (2791)	27	.001		.004
TOTAL COST	5,818	.207		.908
TOTAL SOLVENT RECLAIMED (lbs.)			28,090	
Days Operated:			18	
Drums on Hand - Beginning:			521	
Drums on Hand - Ending:			651	
Drums Processed:			84	
Drums Transferred to S1-10:			214	
Lbs. Condensed:			6,403	
Lbs. Decanted:			21,687	
Lbs. to A-4 Cascades:			28,090	
Lbs. to A-5 Storage:			- 0 -	
Total Lbs. Recovered to Date:			3,009,912	

NOVEMBER - 1960
Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost	Condensed Unit Cost
TOTAL LABOR	2,056	.086	.422
Direct	1,475	.062	.302
Maint & Engr	344	.014	.071
Departmental	237	.010	.049
Miscellaneous	0	--	--
TOTAL MATERIAL	367	.016	.075
Direct	0	--	--
Maint & Engr	92	.004	.019
Departmental	275	.012	.056
Miscellaneous	0	--	--
TOTAL LABOR & MATERIAL	2,423	.102	.497
A P E	1,951	.082	.400
TOTAL WORKED MATERIAL	0	--	--
Special Services (2791)	0	--	--
TOTAL COST	4,374	.184	.897
TOTAL SOLVENT RECLAIMED (lbs)		23,778	
Days Operated:		21	
Drums on Hand - Beginning:		651	
Drums on Hand - Ending:		1,047	
Drums Processed:		148	
Drums Transferred to 81-10:		544	
Pounds Condensed:		4,876	
Pounds Decanted:		18,902	
Pounds to A-4 Cascades:		23,778	
Pounds to A-5 Storage:		-0-	
Total Pounds Recovered to Date:		3,033,690	✓

NOVEMBER - 1960
Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2,056	.086		.422
Direct	1,475	.062		.302
Maint & Engr	344	.014		.071
Departmental	237	.010		.049
Miscellaneous	0	—		—
TOTAL MATERIAL	367	.016		.075
Direct	0	—		—
Maint & Engr	92	.004		.019
Departmental	275	.012		.056
Miscellaneous	0	—		—
TOTAL LABOR & MATERIAL	2,423	.102		.497
A P E	1,951	.082		.400
TOTAL WORKED MATERIAL	0	—		—
Special Services (2791)	0	—		—
TOTAL COST	4,374	.184		.897
TOTAL SOLVENT RECLAIMED (lbs)			23,778	
Days Operated:			21	
Drums on Hand - Beginning:			651	
Drums on Hand - Ending:			1,047	
Drums Processed:			148	
Drums Transferred to 81-10:			544	
Pounds Condensed:			4,876	
Pounds Decanted:			18,902	
Pounds to A-4 Cascades:			23,778	
Pounds to A-5 Storage:			—	
Total Pounds Recovered to Date:			3,033,690	

DECEMBER - 1960

Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2863	.101		.287
Direct	2249	.079		.226
Maint & Engr	329	.012		.033
Departmental	285	.010		.029
Miscellaneous	0	-		-
TOTAL MATERIAL	199	.007		.020
Direct	3	.0001		.0003
Maint & Engr	18	.0006		.0022
Departmental	178	.006		.018
Miscellaneous	0	-		0
TOTAL LABOR & MATERIAL	3062	.108		.307
A P E	2778	.098		.279
TOTAL WORKED MATERIAL	0	-		-
TOTAL COST	5840	.206		.586
TOTAL SOLVENT RECLAIMED (Lbs)			28,414	
Days Operated			23	
Drums on Hand - Beginning			1,047	
Drums on Hand - Ending			873	
Drums Processed			232	
Drums transferred to 81-10			58	
Pounds condensed:			9,965	
Pounds decanted:			18,449	
Pounds to A-4 cascades			28,414	
Pounds to A-5 storage			-	
Total pounds recovered to date			3,062,104	✓

DECEMBER - 1960

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2863	.101		.287
Direct	2249	.079		.226
Maint & Engr	329	.012		.033
Departmental	285	.010		.029
Miscellaneous	0	-		-
TOTAL MATERIAL	199	.007		.020
Direct	3	.0001		.0003
Maint & Engr	18	.0006		.0022
Departmental	178	.006		.018
Miscellaneous	0	-		-
TOTAL LABOR & MATERIAL	3062	.108		.307
A PE	2778	.098		.279
TOTAL WORKED MATERIAL	0	-		-
TOTAL COST	5840	.206		.586
TOTAL SOLVENT RECLAIMED (Lbs)			28,414	
Days Operated			23	
Drums on hand - Beginning			1047	
Drums on hand - Ending			873	
Drums Processed:			232	
Drums transferred to 81-10			58	
Pounds condensed:			9965	
Pounds decanted:			18449	
Pounds to A-4 Cascades			28414	
Pounds to A-5 Storage			--	
Total Pound Recovered to Date			3,062,104	

(1-59) Y-12 Data Sheet

JANUARY 1961

Account 2686

SOLVENT RECOVERY FACILITY

		Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR		3246	.113		.285
Direct		2786	.097		.245
Maint & Engr		387	.013		.034
Departmental		73	.002		.006
Miscellaneous		0	0		0
TOTAL MATERIAL		519	.018		.045
Direct		0	0		0
Maint & Engr		172	.006		.015
Departmental		347	.012		.030
Miscellaneous		0	0		0
TOTAL LABOR & MATERIAL		3765	.131		.331
APE		3457	.120		.304
TOTAL WORKED MATERIAL		16	.0006		.0014
TOTAL COST		7238	.252		.636
TOTAL SOLVENT RECOVERED	(Lbs)			28,729	
	Days Operated:			29.7	
	Drums on hand - Beginning			873	
	Drums on hand - Ending			676	
	Drums Processed			2356	
	Drums transferred to 81-10			159	
	Lbs. condensed			11,378	
	Lbs. decanted			17,351	
	Lbs. to A-4 Cascades			0	
	Lbs. to A-5 Storage			28,729	
	Total Lbs. recovered to date			3,095,787	3090833 +4954

FEBRUARY - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2151	.075		.292
Direct	1617	.056		.220
Maint & Engr	425	.015		.058
Departmental	109	.004		.015
Miscellaneous	0	-		-
TOTAL MATERIAL	195	.0068		.0265
Direct	0	-		-
Maint & Engr	48	.0016		.0065
Departmental	147	.005		.0199
Miscellaneous	0	-		-
TOTAL LABOR & MATERIAL	2346	.082		.319
TOTAL WORKED MATERIAL	0	-		-
A P E	2442	.085		.332
TOTAL COST	4788	.167		.651
TOTAL SOLVENT RECLAIMED (Lbs)			28,735	
Days Operated			28	
Drums on hand - Beginning			676	
Drums on hand - Ening			522	
Drums Processed			177	
Drums transferred to 81-10			23	
Pounds condensed			7,358	
Pounds decanted			21,377	
Pounds to A-4 Cascades			0	
Pounds to A-5 Storage			28,735	
Total Pounds Recovered to Date			3,124,522	NO

FEBRUARY - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condensed Unit Cost
TOTAL LABOR	2151	.075		.292
Direct	1617	.056		.220
Maint & Engr	425	.015		.058
Departmental	109	.004		.015
Miscellaneous	0	-		-
TOTAL MATERIAL	195	.0068		.0265
Direct	0	-		-
Maint & Engr	48	.0016		.0065
Departmental	147	.005		.0199
Miscellaneous	0	-		-
TOTAL LABOR & MATERIAL	2346	.082		.319
TOTAL WORKED MATERIAL	0	-		-
A P E	2442	.085		.332
TOTAL COST	4788	.167		.651
TOTAL SOLVENT RECLAIMED (Lbs)			28,735	
Days Operated			28	
Drums on hand - Beginning			676	
Drums on hand - Ending			522	
Drums Processed			177	
Drums transferred to 81-10			23	
Pounds condensed			7,358	
Pounds decanted			21,377	
Pounds to A-4 Cascades			0	
Pounds to A-5 Storage			28,735	
Total Pounds Recovered to Date			3,124,522	

MARCH - 1961

Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost		Condens Unit Co
TOTAL LABOR	2906	.053		.133
Direct	2222	.041		.102
Maint & Engr	529	.010		.0245
Departmental	155	.003		.007
Miscellaneous	-	-		-
TOTAL MATERIAL	431	.008		.020
Direct	-	-		-
Maint & Engr	226	.004		.010
Departmental	205	.0037		.009
Miscellaneous	-	-		-
TOTAL WORKED MATERIAL	33	.0006		.0015
A P E	2925	.054		.133
TOTAL COST	6295	.116		.287
TOTAL SOLVENT RECLAIMED (Lbs)			54,405	
Days Operated			31	
Drums On Hand - Beginning			522	
Drums On Hand - Ending			278	
Drums Processed			273	
Drums transferred to 81-10			29	
Pounds Condensed			21,912	
Pounds Decanted			32,493	
Pounds to A-5 Storage			54,405	
Total Pounds Recovered to Date			3,178,927	

MARCH - 1961

Account 2686
SOLVENT RECOVERY FACILITY

	Amount	Total Prod Unit Cost	Condensed Unit Cost
TOTAL LABOR	2906	.053	.133
Direct	2222	.041	.102
Maint & Engr	529	.010	.0245
Departmental	155	.003	.007
Miscellaneous	-	-	-
TOTAL MATERIAL	431	.008	.020
Direct	-	-	-
Maint & Engr	226	.004	.010
Departmental	205	.0037	.009
Miscellaneous	-	-	-
TOTAL WORKED MATERIAL	33	.0006	.0015
A P E	2925	.054	.133
TOTAL COST	6295	.116	.287

TOTAL SOLVENT RECLAIMED (Lbs)	54,405
Days Operated	31
Drums On Hand - Beginning	522
Drums On Hand - Ending	278
Drums Processed	273
Drums transferred to 81-10	29
Pounds Condensed	21,912
Pounds Decanted	32,493
Pounds to A-5 Storage	54,405
Total Pounds Recovered to Date	3,178,927

APRIL - 1961

Account 2686

SOLVENT RECOVERY FACILITY

		Amount	Unit Cost Total Prod.		Unit Cost Condensed
TOTAL	LABOR	2458	.037		.074
	Direct	2202	.033		.067
	Maint & Engr.	256	.004		.008
	Departmental	-	-		-
	Miscellaneous	-	-		-
TOTAL	MATERIAL	891	.013		.027
	Direct	-	-		-
	Maint & Engr	514	.0077		.0155
	Departmental	377	.0056		.0114
	Miscellaneous	-	-		-
TOTAL	WORKED MATERIAL	-	-		-
A P E		2755	.041		.083
TOTAL	COST	6104	.091		.182
TOTAL	SOLVENT RECLAIMED (Lbs)			67,019	
	Days Operated			30	
	Drums On Hand - Beginning			278	
	Drums On Hand - Ending			67	
	Drums Processed			329	
	Drums Transferred to 81-10			118	
	Pounds Condensed			33,089	
	Pounds Decanted			33,930	
	Pounds to A-5 Storage			67,019	
	Total Pounds Recovered to Date			3,245,946	

APRIL - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount	Unit Cost Total Prod.	Unit Cost Condensed
TOTAL LABOR	2458	.037	.074
Direct	2202	.033	.067
Maint & Engr.	256	.004	.008
Departmental	-	-	-
Miscellaneous	-	-	-
TOTAL MATERIAL	891	.013	.027
Direct	-	-	-
Maint & Engr	514	.0077	.0155
Departmental	377	.0056	.0114
Miscellaneous	-	-	-
TOTAL WORKED MATERIAL	-	-	-
A P E	2755	.041	.083
TOTAL COST	6104	.091	.182

TOTAL SOLVENT RECLAIMED (Lbs)	67,019
Days Operated	30
Drums On Hand - Beginning	278
Drums On Hand - Ending	67
Drums Processed	329
Drums Transferred to 81-10	118
Pounds Condensed	33,089
Pounds Decanted	33,930
Pounds to A-5 Storage	67,019
Total Pounds Recovered to Date	3,245,946

MAY - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount
TOTAL LABOR	414
Direct	62
Maint & Engr	352
Departmental	0
Miscellaneous	0
TOTAL MATERIAL	85
Direct	0
Maint & Engr	85
Departmental	0
Miscellaneous	0
TOTAL WORKED MATERIAL	0
A P E	379
TOTAL COST	878
TOTAL SOLVENT RECLAIMED	0
Day Operated	0
Drums on hand beginning	67
Total pounds recovered to date	3,245,946

MAY - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount
TOTAL LABOR	414
Direct	62
Maint & Engr	352
Departmental	0
Miscellaneous	0
TOTAL MATERIAL	85
Direct	0
Maint & Engr	85
Departmental	0
Miscellaneous	0
TOTAL WORKED MATERIAL	0
A P E	379
TOTAL COST	878
TOTAL SOLVENT RECLAIMED	0
Day Operated	0
Drums on hand beginning	67
Total pounds recovered to date	3,245,946

JUNE - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount
TOTAL LABOR	857
Direct	0
Maint & Engr	857
Departmental	0
Miscellaneous	0
TOTAL MATERIAL	897
Direct	0
Maint & Engr	897
Departmental	0
Miscellaneous	0
TOTAL WORKED MATERIAL	0
A P E	891
TOTAL COST	2,645
TOTAL SOLVENT RECLAIMED	0
Days Operated	0
Drums on hand beginning	67
Drums on hand ending	79
Total pounds recovered to date	3,245,946

JUNE - 1961

Account 2686

[redacted] RECOVERY FACILITY

	Amount
TOTAL LABOR	957
[redacted]	0
[redacted]	957
[redacted]	0
[redacted]	0
TOTAL MATERIAL	947
[redacted]	0
[redacted]	947
[redacted]	0
[redacted]	0
TOTAL WORKS PROJECTS	0
A F S	541
TOTAL COST	2,445
[redacted]	0
[redacted]	0
[redacted]	67
[redacted]	32
Total pounds received to date	3,215,916

JULY - 1961

Account 2686

SOLVENT RECOVERY FACILITY

	Amount
TOTAL LABOR	164
Direct	0
Maint & Engr	164
Departmental	0
Miscellaneous	0
TOTAL MATERIAL	0
Direct	0
Maint & Engr	0
Departmental	0
Miscellaneous	0
TOTAL WORKED MATERIAL	0
A P E	168
TOTAL COST	332
TOTAL SOLVENT RECOVERED	0
Days Operated	0
Drums On Hand Beginning	79
Drums On Hand Ending	110

Total Pounds Recovered To Date 3,245,946

JANUARY - 1962

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

	Amount	Unit Cost Total Prod	Unit Condens
TOTAL LABOR	3600	.124	.158
Direct	1418	.049	.062
Maint & Engr	1602	.055	.070
Departmental	580	.020	.026
Miscellaneous	0	-	-
TOTAL MATERIAL	571	.019	.025
Direct	6	.002	.003
Maint & Engr	540	.018	.024
Departmental	25	.008	.011
Miscellaneous	0	-	-
TOTAL WORKED MATERIAL			
A P E	3974	.137	.175
TOTAL COST	8145	.280	.358
TOTAL SOLVENT RECLAIMED (Lbs)	29,058		
Days Operated	20		
Drums On Hand - Beginning	682		
Drums On Hand - Ending	612		
Drums Processed	102		
Drums Transferred to 81-10	32		
Pounds Condensed	22,744		
Pounds Decanted	6,314		
Total Pounds Recovered to Date	3,347,387 ?		

JANUARY- 1962

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

	Amount	Unit Cost Total Prod	Unit Co Condense
TOTAL LABOR	3600.00	.124	.158
Direct	1418.00	.049	.062
Maint & Engr	1602.00	.055	.070
Departmental	580.00	.020	.026
Miscellaneous	0	–	–
TOTAL MATERIAL	571	.019	.025
Direct	6	.002	.003
Maint " Engr	540	.018	.024
Departmental	25	.008	.011
Miscellaneous	0		
TOTAL WORKED MATERIAL	–	–	–
A P E	3974	.137	.175
TOTAL COST	8145	.280	.358
TOTAL SOLVENT RECLAIMED (Lbs)	29,058		
Days Operated	20		
Drums On Hand - Beginning	682		
Drums On Hand - Ending	612		
Drums Processed	102		
Drums Transferred to 81-10	32		
Pounds Condensed	22,744		
Pounds Decanted	6 314		
Total Pounds Recovered to Date	3,347,387		

FEBRUARY, 1962

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

	AMOUNT	Unit Cost Total Prod	Unit Cost Condensed
TOTAL LABOR	3255	.043	.099
Direct	1890	.025	.058
Maint & Engr	737	.010	.023
Departmental	628	.008	.019
Miscellaneous	0	0	0
TOTAL MATERIAL	396	.005	.012
Direct	0	0	0
Maint & Engr	350	.005	.011
Departmental	46	.001	.001
Miscellaneous	0	0	0
TOTAL WORKED MATERIAL			
A P E	3803	.050	.116
TOTAL COST	7454	.098	.228
TOTAL SOLVENT RECLAIMED (Lbs)	75,931		
Days Operated	28		
Drums On Hand - Beginning	612		
Drums On Hand - Ending	398		
Drums Processed	318		
Drums Transferred to 81-10	104		
Pounds Condensed	32,619		
Pounds Decanted	43.312		

Total Pounds Recovered to Date (3,423,318) ?

February

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

	Amount	Unit Cost Total Prod	Unit C Conde
TOTAL LABOR	3255	.043	.099
Direct	1890	.025	.058
Maint & Engr	737	.0099	.023
Departmental	628	.0083	.019
Miscellaneous	0	—	—
TOTAL MATERIAL	396	.0052	.012
Direct	—		
Maint & Engr	350	.0046	.011
Departmental	46	.0006	.0014
Miscellaneous	0		
TOTAL WORKED MATERIAL			
A P E	3803	.050	.116
TOTAL COST	7454	.098	.228
TOTAL SOLVENT RECLAIMED (Lbs)	75,931		
Days Operated	28		
Drums On Hand - Beginning	612		
Drums On Hand - Ending	398		
Drums Processed	318		
Drums Transferred to 81-10	104		
Pounds Condensed	32,619		
Pounds Decanted	43,312		
Total Pounds Recovered to Date	3,423,318		

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

MARCH, 1962

	Amount	Unit Cost Total Prod	Unit Cost Condensed
TOTAL LABOR	5,125	.062	.130
Direct	3,052	.037	.077
Maint & Engr	1,014	.012	.026
Departmental	1,059	.013	.027
Miscellaneous	-	-	-
TOTAL MATERIAL	744	.009	.018
Direct	-	-	-
Maint & Engr	730	.009	.018
Departmental	14	.001	.001
Miscellaneous	-	-	-
TOTAL WORKED MATERIAL			
A P E	5,205	.063	.132
TOTAL COST	11,074	.134	.280
SOLVENT RECLAIMED (Lbs)	82,508		
Days Operated	30		
Drums On Hand - Beginning	398		
Drums On Hand - Ending	185		
Drums Processed	249		
Drums Transferred to 81*10	36		
Pounds - Condensed	39,505		
Pounds - Decanted	43,003		
Total Pounds Recovered to Date	3,505,826		

March, 1962

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

	Amount	Unit Cost Total Prod	Unit C Conde
TOTAL LABOR	5,125	.062	.130
Direct	3,052	.037	.077
Maint & Engr	1,014	.012	.026
Departmental	1,059	.013	.027
Miscellaneous	—		
TOTAL MATERIAL	744	.009	.019
Direct	—	—	—
Maint & Engr	730	.009	.018
Departmental	14	.001	.001
Miscellaneous	—	—	—
TOTAL WORKED MATERIAL			
A P E	5,205	.063	.132
TOTAL COST	11,074	.134	.280
TOTAL SOLVENT RECLAIMED (Lbs)	82,508		
Days Operated	30		
Drums On Hand - Beginning	398		
Drums On Hand - Ending	185		
Drums Processed	249		
Drums Transferred to 81-10	36		
Pounds Condensed	39,505		
Pounds Decanted	43,003		
	82,508		
Total Pounds Recovered to Date	3,505,876		

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

APRIL, 1962

	Amount	Unit Cost Total Prod	Unit Cost Condensed
TOTAL LABOR	3873	.1026	.3035
Direct	2563	.0679	.2008
Maint & Engr	326	.0086	.0255
Departmental	984	.0261	.0771
Miscellaneous	0	-	-
TOTAL MATERIAL	183	.0048	.0143
Direct	0	-	-
Maint & Engr	174	.0046	.0136
Departmental	9	.0002	.0007
Miscellaneous	0	-	-
TOTAL WORKED MATERIAL			
A P E	4939	.1309	.3870
TOTAL COST	8995	.2383	.7048
TOTAL SOLVENT RECOVERED (Lbs)	37,739		
Days Operated	30		
Drums On Hand - Beginning	185		
Drums On Hand - Ending	31		
Drums Processed	171		
Drums transferred to 81-10	17		
Pounds Condensed	12,762		
Pounds Decanted	24,977		
Total Pounds Recovered to Date	3,543,565		

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

april, 1962

	Amount	Unit Cost Total Prod	Unit C Conde
TOTAL LABOR	3873	.1076	.3035
Direct	2563	.0679	.2009
Maint & Engr	326	.0086	.0255
Departmental	984	.0261	.0771
Miscellaneous			
TOTAL MATERIAL	183	.0048	.0143
Direct	—	—	—
Maint & Engr	174	.0046	.0136
Departmental	9	.0002	.0007
Miscellaneous	—	—	—
TOTAL WORKED MATERIAL			
A P E	4939	.1309	.3870
TOTAL COST	8995	.2383	.7048
TOTAL SOLVENT RECLAIMED (Lbs)		37,739	
Days Operated			
Drums On Hand - Beginning		185	
Drums On Hand - Ending		31	
Drums Processed		171	
Drums Transferred to 81-10		17	
Pounds Condensed		12,762	
Pounds Decanted		24,977	
Total Pounds Recovered to Date		3,543,565	

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

May, 1962

	Amount	Unit Cost Total Prod.	Unit Cost Condensed
TOTAL LABOR	2103	.1299	.2762
Direct	1409	.0870	.1850
Maint & Engr	237	.0146	.0311
Departmental	457	.0282	.0600
Miscellaneous	0	0	0
TOTAL MATERIAL	323	.0199	.0425
Direct	-	-	-
Maint & Engr	244	.0151	.0320
Departmental	79	.0048	.0104
Miscellaneous	0	0	0
A P E	2434	.1503	.3196
TOTAL COST	4860	.3001	.6382
TOTAL SOLVENT RECLAIMED	16,195		
Days Operated	12		
Drums on Hand - Beginning	31		
Drums on Hand - Ending	164		
Drums Processed	72	3.6%	
Drums transferred to 81-10	205		
Pounds Condensed	7,615		
Pounds Decanted	8,580		
TOTAL POUNDS RECOVERED TO DATE:		3,559,760	

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

May, 1962

	Amount	Unit Cost Total Prod.	Unit Cost Condensed
TOTAL LABOR	2103	.1299	.2762
Direct	1409	.0870	.1850
Maint & Engr	237	.0146	.0311
Departmental	457	.0282	.0600
Miscellaneous	0	0	0
TOTAL MATERIAL	323	.0199	.0425
Direct	-	-	-
Maint & Engr	244	.0151	.0320
Departmental	79	.0048	.0104
Miscellaneous	0	0	0
A P E	2434	.1503	.3196
TOTAL COST	4860	.3001	.6382
TOTAL SOLVENT RECLAIMED	16,195		
Days Operated	12		
Drums on Hand - Beginning	31		
Drums on Hand - Ending	164		
Drums Processed	72		
Drums transferred to 81-10	205		
Pounds Condensed	7,615		
Pounds Decanted	8,580		
TOTAL POUNDS RECOVERED TO DATE:		3,559,760	

CX-885 (Jan'48) Y-12 DATA SHEET

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

June 1962

	Amount
TOTAL LABOR	754
Direct	458
Maint & Engr	142
Departmental	154
TOTAL MATERIAL	-0-
Direct	-0-
Maint & Engr	-0-
Departmental	-0-
A P E	955
TOTAL COST	1,709
TOTAL SOLVENT RECLAIMED	-0-
TOTAL POUNDS RECOVERED TO DATE	3,559,760

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

July 1962

	Amount
TOTAL LABOR	555
Direct	241
Maint & Engr	144
Department	170
TOTAL MATERIAL	0
Direct	0
Maint & Engr	0
Departmental	0
A P E	427
TOTAL COST	982
TOTAL SOLVENT RECLAIMED	-0-
TOTAL POUNDS RECOVERED TO DATE	3,559,760

ACCOUNT 2686

SOLVENT RECOVERY FACILITY

AUGUST, 1962

		Amount	Unit Cost Total Prod
TOTAL LABOR		1,432	.0486
Direct		843	.0286
Maint & Engr		247	.0084
Departmental		342	.0116
TOTAL MATERIAL		94	.0032
Direct		-0-	-0-
Maint & Engr		18	.0006
Departmental		76	.0026
A P E		1,292	.0439
TOTAL EXPENSE		2,818	.0957
SOLVENT RECLAIMED (Lbs)	29,453		
Decanted (Lbs)	29,453		
Condensed)Lbs)	-0-		
TOTAL POUNDS RECOVERED TO DATE		3,589,213 ~~3,615,626~~	

Account 2686

Sept. 1962

	Amt.	Unit Cost Total Prod.
Total Labor	486	.0964
Direct	250	.0496
Maint + Engr	184	.0365
Departmental	52	.0103
Total Material	5	.0009
Direct	0	
Maint + Engr	0	
Departmental	5	.0009
APE	$376	.0746
Total Expense	867	.172
Solvent Reclaimed	5,039	
Decanted (Lbs)	5,039	
Condensed (Lbs)	0	
Total Pounds Recovered To date		3,594,252

Y/HG-0023

ACCOUNT 2606

SOLVENT RECOVERY FACILITY

~~MAY~~ Oct 1962

		Amount	Unit Cost
TOTAL LABOR		53	
	Direct	0	
	Maint & Engr	0	
	Departmental	53	
	Other	0	
TOTAL MATERIAL		0	
	Direct	0	
	Maint & Engr	0	
	Departmental	0	
	Other	0	
A P E		45	
TOTAL EXPENSE		98	
Solvent Reclaimed (Lbs)		0	
	Decanted (Lbs)	0	
	Condensed (Lbs)	0	
Total Pounds Recovered To Date		2,594,252	